

Cafferata, Fernando G.; Domínguez, Patricio; Scartascini, Carlos G.

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Overconfidence and gun preferences: How behavioral biases affect your safety

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IDB WORKING PAPER SERIES N° IDB-WP-1225

Overconfidence and Gun Preferences:

How Behavioral Biases Affect Your Safety

Fernando G. Cafferata
Patricio Domínguez
Carlos Scartascini

Inter-American Development Bank
Department of Research and Chief Economist

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Fernando G. Cafferata*

Patricio Domínguez**

Carlos Scartascini**

* UNTREF-UBA-UdeSA

** Inter-American Development Bank

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Abstract

Overconfidence leads to risky behavior, including when people are around guns. Does overconfidence also shape attitudes about gun ownership and use? We evaluate this possibility by conducting nationally representative surveys in six countries in the Americas, including the United States. Results show that overconfident individuals are more willing to accept the use of guns and more likely to declare their willingness to use guns. These results indicate that overconfidence is a significant behavioral trait correlated with attitudes toward weapons handling, ownership, carrying, and use. Overall, over-confidence could lead, in equilibrium, to lower regulation than optimal and a higher amount of guns, even before considering the effect of the electoral system, lobbying, and campaign contributions. Efforts to correct the biases of individuals confronted with making decisions about guns should be a priority, especially in regulatory contexts. Information about actual performance and the risks entailed by wrong choices is a must. Obliging individuals to reflect on their choices may also help correct observed biases.

JEL classifications: D91, K40, D72

Keywords: Overconfidence, Gun attitudes, Gun behavior, Crime, Behavioral biases

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“What would I eliminate if I had a magic wand? Overconfidence”
Daniel Kahneman (18 July 2015)¹

“The blade itself incites to deeds of violence.”
Homer

1 Introduction

Overconfidence is observed when people’s subjective confidence in their own ability is greater than their actual performance. It has consequences in a wide range of decision-making processes, leading to risky behaviors (Stark and Sachau, 2016). It affects decisions related to health (Larwood, 1978), wars (Bouris, 2006), market behaviors (Camerer and Lovo, 1999; García et al., 2007), and finance (Glaser and Weber, 2007; Statman et al., 2006), and it has been linked to speculative bubbles (Scheinkman and Xiong, 2003; Sandroni and Squintani, 2004; Skala, 2008).

These outcomes do not come out of thin air but are determined by the attitudes of the actors involved in decision-making. It has been observed in the judgments of physicians, clinical psychologists, lawyers, negotiators, engineers, and security analysts (Griffin and Tversky, 1992). Overconfident CEOs tend to make more reckless merger decisions (Malmendier and Tate, 2008), and entrepreneurs tend to believe that their chances of success are higher than they are (Cooper et al., 1988). Overconfidence is highly correlated with criminal offending (Loughran et al., 2011).²

If overconfidence in one’s skills leads to risky behaviors, injuries, and fatalities, it may also affect attitudes toward guns and gun safety. Overconfident individuals overestimate their ability and competence around guns (Ehrlinger et al., 2008; Stark and Sachau, 2016), and pro-gun people are more overconfident on their gun abilities (Stark and Sachau, 2016). If that is true, then voters and their representatives may be making decisions based not on their true ability but on a biased assessment of their ability. And if that results in the presence of more than the optimal supply of guns, then it may have dire welfare consequences. In the United States, unintentional shootings cause approximately 500 deaths and 20,000 injuries each year (Annest et al., 1995; Giffords Law Center, 2020), and disproportionately more in states where weapons may be stored loaded (Miller et al., 2005). Ownership and carrying of firearms tend to be correlated with higher levels of gun-related homicide (Anglemyer et al., 2014; Bangalore and Messerli, 2013; Hemenway et al., 2000; Hepburn and Hemenway, 2004; Kalesan et al., 2016; Kleck et al., 2011; Krug et al., 1998; Lee et al., 2017; Miller et al., 2005; Richardson and Hemenway, 2011; Siegel et al., 2013).³ Furthermore, the availability

¹<https://www.theguardian.com/books/2015/jul/18/daniel-kahneman-books-interview>

²Alicke and Govorun (2005) reviews this literature.

³According to Violence Policy Center (2017), for every justifiable homicide involving guns there were 44 criminal homicides in the four-year period analyzed, implying that guns are rarely used in self-defense. Unfortunately, mass shootings tend to lead to higher firearms sales (Porfiri et al., 2019).

of weapons and firearms is highly correlated with the incidence of suicide (Brent et al., 1991, 1993; Briggs and Tabarrok, 2014; Conwell et al., 2002; Wiebe, 2003).⁴ Firearm-related injuries are the leading cause of death among people ages 1 to 19 years in the United States (National Institute of Health, 2022).

In Latin America, the evidence is similar. Weak gun-control laws, easy access to guns, and greater prevalence of guns are all associated with higher levels of murder, mortality, and violence (Abrás et al., 2014; Cerqueira et al., 2013; Chicoine, 2017; Concaro and Olaeta, 2011; Dube et al., 2013; Otamendi, 2019). Evidence also shows that gun-related homicides are especially high among young people; 80% of all homicides of people between the ages of 10 and 19 years involve firearms (Otamendi, 2019).

In this article, we evaluate the relationship between overconfidence and gun preferences using a novel online survey administered to more than 7,000 individuals in Argentina, Brazil, Chile, Colombia, Mexico, and the United States.⁵ We test how overconfidence affects the gun-related attitudes and preferences of citizens in the Americas. Overconfidence bias is measured both in absolute terms (*overestimation*) and relative terms (*overplacement*) using a battery of questions. To assess overestimation, subjects are asked a set of general knowledge questions. Their actual ability (based on their answers to these questions) is then compared with their own estimation of their ability.⁶ Overplacement is measured by asking individuals to assess their abilities compared with the rest of the population. Gun-related attitudes and preferences (including ownership) are measured by two sets of questions. The first asks respondents for their opinion about who should or should not carry weapons (e.g., the police, private guards, and ordinary citizens). The second asks individuals whether they would use a gun in various crime situations.

We find that overconfidence (measured either as overestimation or overplacement) is positively correlated with a higher likelihood of favoring the ownership and carrying of weapons and with a higher self-reported likelihood of using a gun when facing a criminal. An increase of one standard deviation on the overestimation or the overplacement index is associated with an average increase of 0.04 standard deviation in the four outcome variables related to carrying weapons (by the police, security guards, and citizens at home and on the street.) Overconfidence is also positively correlated to the probability that an individual answers that they would offer resistance to a burglary or a robbery. For example, it increases the odd ratio of offering resistance to try to prevent the burglary only if I had a weapon similar to that of the burglar compared to never doing it by 5% in the case of overestimation and 6% in the case of overplacement. These results show that overconfidence is a significant behavioral trait correlated with attitudes toward weapons handling, ownership, carrying, and use.

The results in this article provide additional evidence about the role that overconfidence

⁴More than 24,000 Americans commit suicide using guns every year (Pew Research Center, 2022).

⁵These countries were selected because their internet penetration was deep enough to ensure a representative sample.

⁶For access to the specific questions refer to section A.1 in the Appendix.

could be playing in individual decisions about gun ownership.⁷ Given that overconfidence is also linked to more risky behaviors and overestimation of one’s own ability related to guns, this could spell trouble. In private markets, consumer overconfidence leads to consumer harm and deadweight losses (Dhami, 2016; Grubb, 2015). Usually, more is consumed at a higher price. This can be exploited by gun manufacturers. But in the case of guns, there is also a political component related to regulation. Given that political elites are subject to the same biases as others (Lyons et al., 2020), the combination of biases in the population and in the political elites could affect decision-making and result in lower than optimal regulation. Debates about gun regulation usually do not consider the possibility that behavioral biases could be affecting support for guns. When there is overconfidence, there is going to be an underestimation of the marginal social cost of firearms, which will lead to a lower supply of regulation.⁸ Voters will also demand lower regulation, as it has been shown to happen in other markets (Warren and Wood, 2010). Overall, overconfidence could lead, in equilibrium, to lower regulation than optimal and a higher amount of guns, even before considering the effect of the electoral system, lobbying, and campaign contributions.

2 Data

The data were collected through an online survey carried out in 2019 by the Latin American Public Opinion Project (LAPOP) at Vanderbilt University and the Inter-American Development Bank (IDB). The total sample consisted of 7,298 individuals from six countries in the Americas. Each national subsample is representative of the adult population in that nation. The sample included 1,119 respondents for Argentina, 1,300 for Brazil, 1,280 for Chile, 1,300 for Colombia, 1,299 for Mexico, and 1,000 for the United States.⁹ In all countries the survey was conducted online based on a panel of respondents managed by Netquest. To approximate a random target sample, the selection of panelists was based on all socio-demographic variables common between panel records (Netquest) and census records (IPUMS). The main constraint on the set of variables was the availability of variables in public microdata.¹⁰ Netquest sent out batches of invites, and LAPOP re-matched panelists to unfilled target sample slots. The process was repeated to approximately fill the target sample and finally reweighted to population using post-stratification weights.

The set of countries includes Argentina, Chile, and the United States, where the homicide rate is similar to the global average (around 6 homicides per 100,000 people), and Brazil,

⁷Gun attitudes are also affected by priming (Hayes et al., 2020).

⁸It is easy to extend a simple Pigouvian Tax model for firearms (as in Kobayashi (1997)) to the case of overconfidence.

⁹Table A.1 in the Appendix presents the main descriptive statistics of the sample, including socio-demographic (sex, age, employment, income, marital status, and education), trust, and life satisfaction variables.

¹⁰Among the variables used to match target and panel records are gender, age, educational level, employment status, number of persons in each household, and a set of characteristics specifically available for each country.

Colombia, and Mexico, which are among the countries with the highest homicide rates in the world (above 20 homicides per 100,000 people). These countries also differ on the rate of gun ownership per 100 people. The Latin American countries average between 7 and 13 guns while it is around 120 for the US (Small Arms Survey, 2018). These are also countries with high internet penetration rates, and places where the survey agency considered it more likely to obtain a representative sample of the population.

2.1 Gun Attitudes

We measure gun attitudes and preferences using two sets of questions.¹¹ In the first set of questions, respondents must indicate their agreement with a series of statements regarding gun ownership and carry by the *police*, *guards*, *citizens at home*, and *citizens in the street*. For example, respondents are asked about how much they agree with the statement that citizens should be able to carry weapons in the street. The answers are coded on a *Likert scale* from 1 to 7, where 1 means “strongly disagree” and 7 “strongly agree”. The full set of questions is provided in the Appendix (section A.1).

The second set of questions queries the respondents about their hypothetical reaction if faced with different crime situations. The questions have a similar format but feature changes in context, as follows: “Imagine that you are [walking down the street/you are at home] by [yourself/with your family] at night, and a criminal tries to rob you. You are not sure if your attacker is armed. What would be your reaction? 1. I would never offer resistance to prevent the robbery; 2. I would offer resistance to try to prevent the robbery only if I had a knife (or similar weapon) to defend myself; 3. I would offer resistance to try to prevent the robbery only if I had a firearm to defend myself; 4. I would always offer resistance to try to prevent the robbery, even if I did not have a weapon.” In our main specification, we treat each response separately and compare the different options to the baseline of not offering resistance.

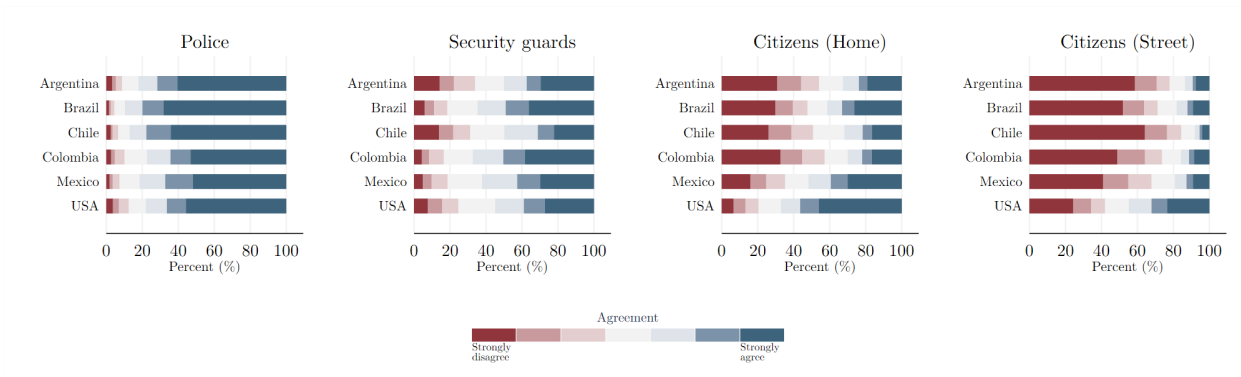
For the empirical analysis, we perform the analyses using the variables in their original scales, standardizing them in Z-scores (all scaled in standard deviations) (Bring, 1994), and constructing binary variables. These alternatives simplify reading the results and allow us to check the consistency of the results across measures. When constructing binary variables for those dependent variables having values between 1 and 7 (*Police*, *Guards*, *Citizens_H* and *Citizens_S*), we considered values 5 to 7 as agreement. For the second set of variables, *Robbery_S*, *Robbery_H* and *Robbery_HF*, which have three different possible values, we coded “never offer resistance” as zero, and “sometimes” and “always” as 1 (offer resistance).

Summary statistics of the dependent variables shown in Figure 1 (and in Table A.2.1 of the Appendix) indicate that responses align well with expectations. Most respondents agree with the statement that the police should be allowed to carry guns (90%), and a smaller

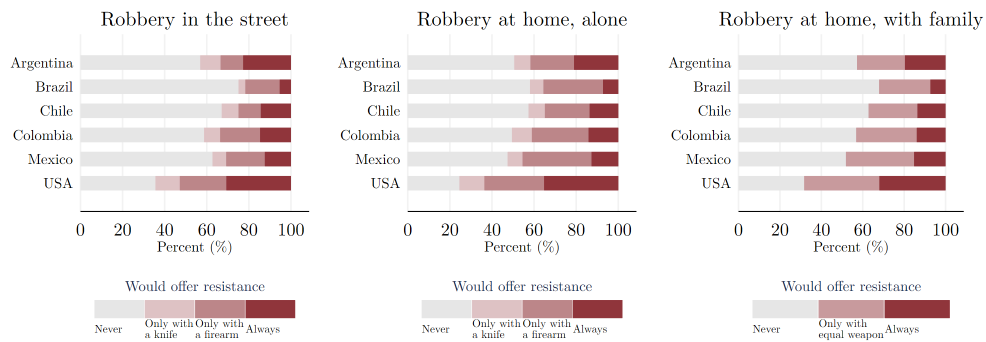
¹¹Gun preferences and attitudes are usually measured by asking respondents about their views on gun-control policy proposals (opposition or support) or by asking them to agree or disagree with statements about guns (Branscombe et al., 1991; Filindra and Kaplan, 2017; Shapiro et al., 1997).

Figure 1: Gun preferences

(a) Carrying a weapon



(b) Willingness to offer resistance



Source: Authors' own elaboration.

but still majority share agree with allowing private guards to do so (70%). Respondents are less likely to agree with allowing citizens to own and carry guns: 48% support allowing citizens to keep guns at home, but only 21% of respondents support allowing them to carry guns in the street. In terms of cross-country comparisons, an interesting case is Chile, where respondents are among the most likely to favor allowing police officers to carry weapons, but among the least likely to allow citizens to carry weapons in public spaces. On the other extreme are respondents from the United States, who are least likely to favor the use of weapons by police but show the greatest support for allowing citizens to keep weapons in their home or carry them in public. U.S. respondents are much more likely to accept citizens owning and carrying guns than are respondents in all other countries. (The U.S. average is about 1 standard deviation higher than the mean for the whole sample.) These stated preferences are in line with the number of guns per capita each country actually have. U.S. respondents (as shown in panel (b)) are also more likely to answer that they would offer resistance to a robbery in the street and at home than are those in other countries.

2.2 Overconfidence: Overestimation and Overplacement

Overconfidence is a known cognitive bias, which affects most people and most decisions, including political behavior (Ortoleva and Snowberg, 2015). Less than 5 percent of students expect to perform below the median, ninety percent of all drivers think they are above average behind the wheel, and more than 90 percent of professors believe they are better than the average professor (Sunstein and Thaler, 2008). Physicians who were certain of their diagnosis were wrong 40 percent of the time (Kahneman, 2011).

Overconfidence in absolute terms—that is, when people believe that their abilities are greater than they are—is known in the literature as *overestimation*. When individuals rank their own skills too far above those of the average person, the bias is called *overplacement* (Moore and Healy, 2008)—also known as *Lake Wobegon Effect*, *illusory superiority*, *above average effect* or *better-than-the average effect* (Ehrlinger et al., 2008; Stark and Sachau, 2016). Finally, when people have excessive certainty about the accuracy of their beliefs, overconfidence is called *overprecision*. As Dan Kahneman suggests in the quotation that opened this article, overconfidence may produce some isolated benefits, such as enhanced self-esteem (Regan et al., 1995) or social status (Anderson et al., 2012; Burks et al., 2013), but it tends to cause greater social harm than many other biases.¹²

Experiments have shown that overconfident individuals tend to be overconfident about their accuracy in answering questions (Harvey, 1997). Therefore, it can be assessed by comparing people’s answers to a set of questions with their self-assessment of the accuracy of their answers (Alicke et al., 1995; Klayman et al., 1999; Larrick et al., 2007; Peon et al., 2014; Ronis and Yates, 1987). This would constitute a clever measure of overconfidence that uses information that is independent of the public policy being analyzed. In the survey, we introduced a set of questions of general interest that would travel well across countries and have no conceivable correlation with gun attitudes. For example, one question asked individuals, “In what country was the singer Rihanna born?” After each question, they were asked to say how confident they felt about their answer. After nine questions, one last asked respondents about the number they believed they had answered correctly, a common approach in the literature (Ronis and Yates, 1987).¹³ We measure *overestimation* at the individual level i by subtracting participants’ actual score from their self-reported estimate (Moore and Healy, 2008; Peon et al., 2014):

$$\text{Overestimation}_i^1 = E_i[X] - \sum_{j=1}^9 x_{ji}, \quad (1)$$

where $E_i[X]$ represents individual i ’s belief about expected performance on the nine questions (expressed numerically, as the number of questions they believe they answered correctly),

¹²Some authors have proposed that overconfidence may be explained by evolution, since it may lead to more economical or faster decisions in certain situations (Johnson and Fowler, 2011).

¹³For the set of nine questions posed refer to Appendix A.1.

and where $\sum_{j=1}^9 x_{ji}$ is the sum of the questions correctly answered by person i . Where the difference is positive, respondents exhibit overestimation, because they believe they have answered more questions correctly than they actually did. Where it is negative, the person exhibits underestimation. We also estimate it using the differences between the response and their assessment of that response:

$$\text{Overestimation}_i^2 = \sum_{j=1}^9 E_i[x_j] - x_{ji}, \quad (2)$$

where $E_i[x_j]$ represents individual i 's belief about expected performance on question j . The average number of correct answers is very similar across countries, going from 5.3 in Brazil to 6 in Mexico (Table A.5). The estimated number of right answers when asked at the end of the survey is similar but slightly higher (from 5 to 6.25) and the estimated number is larger when we add the estimated number of correct answers when individuals answered it after each question (from 5.4 to 7.3).

Because of the way it is constructed, the measure of overestimation could have a negative correlation with the number of questions the respondent correctly answers (the more questions the person answers right, the less likely it is they are going to be measured as overconfident), have also considered two alternative measures. First, we use a dichotomous variable instead of the level of overestimation. Second, we condition the variable with the number of correct responses.

We measure *overplacement* through the *direct method* (Chambers and Windschitl, 2004), whereby respondents are asked to indicate how they believe they stand on various dimensions compared with a reference group (Alicke et al., 1995). Respondents were asked to compare themselves with an average citizen in their country along a set of personal values/attributes: responsibility, ability to make decisions, morality, and responsibility when using weapons.¹⁴ One of the questions was the following: “Do you consider your ability to make decisions to be greater than, equal, or less than that of the average U.S. [your country] citizen?” In the empirical analysis, we deploy each variable independently, but we also construct a principal component (PCA) in order to reduce the dimensionality and look at a unified “overplacement” variable.¹⁵ In this variable, we don’t include the question about weapons given that it could be correlated to our variables of interest, but we show the results as a robustness exercise.

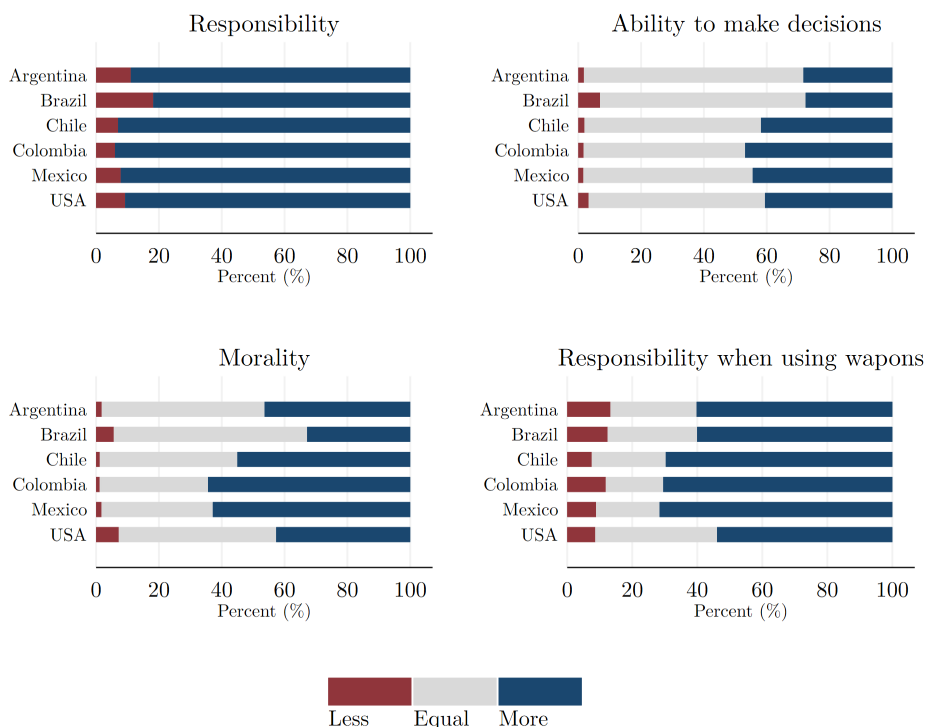
On average, respondents do not overestimate their abilities according to the *overestimation*

¹⁴Overconfidence was measured in other ways, too, such as by asking respondents to estimate what percentile of a certain group they fell into with respect to specific traits (see, for example, Dunning et al. (1989)). Also, overconfidence can be measured as the difference between the proportion of correct answers and mean confidence Larrick et al. (2007).

¹⁵Component loadings, eigen values, density functions, KMO results, and Bartlett’s sphericity test appear in the Appendix in Section A.4.

index, but dispersion is high (a large share of ‘under’ and ‘over’ estimators in the sample).¹⁶ The distribution is clearly skewed when we look at *overplacement* instead. Here, the average respondent tends to rate herself as more able than the average citizen, indicating the presence of *above average effect*. For every measure, the median individual considers herself to be greater than average. Moreover, only 3% consider themselves less able than the average citizen when it comes to their ability to make decisions and morality, and less than 10% consider themselves less able than the average in terms of responsibility. 65% of the individuals consider themselves to be more responsible using weapons than the average. Differences across countries in these measures tend to be relatively small.

Figure 2: Overplacement by country



Source: Authors’ own elaboration.

Who are the overconfident ones? Men are systematically more overconfident than women according to both overestimation and overplacement. Similarly, more educated individuals are less likely to overestimate their knowledge, which is compatible with the Dunning-Kruger effect but are more likely to rate themselves higher than the average citizen on every dimension: responsibility, decisions, morality, and weapons. Older individuals are less likely to rate themselves higher than average in terms of weapons but more likely to do so regarding responsibility and morality. The survey responses are in line with previous evidence (Burks

¹⁶Table A.6 in the Appendix lays out descriptive statistics of the overconfidence variables by country.

et al., 2013; Glaser and Weber, 2007; Camerer and Lovallo, 1999; Sanders et al., 2003; Mishra and Metilda, 2015; Bhandari and Deaves, 2006).¹⁷

3 Empirical Analysis

We examine the relationship between overconfidence and gun preferences by running the following regression:

$$Y_i^v = \theta + \beta_1 \text{Overestimation}_i^u + \beta_{2i} \text{Overplacement}_i^L + \mathbf{X}\Delta + \Psi_c + \mu_i \quad (3)$$

We run different specifications using the dependent variables in the original coding, standardized, or as binary variables (superscript v in the equation). As indicated in the previous section, there are two sets of dependent variables. The first corresponds to respondents' attitudes toward allowing police, guards, and citizens to own or carry guns. The second corresponds to respondents' willingness to resist a robbery under different circumstances. For the first set of dependent variables, we run OLS regressions. For the second set, we run multinomial logit regressions.

Our main independent variables are overestimation and overplacement, which are also considered in their standardized form or in terms of a principal component for overplacement (the different versions are accounted for by the superscript L in the equation). Overestimation is entered in different forms, which is accounted by the superscript u . The index is introduced as identified in equations 1 and 2, but also as a binary variable. We also include a set of individual-level characteristics (\mathbf{X}), as well as country fixed effects, Ψ_c .¹⁸

Table 1 presents the results for the ownership and carry variables using the standardized independent variables measuring overestimation according to equation 1. Each panel shows the results of the regressions introducing one of the indexes at a time and both indexes jointly (panel c). All the regressions include controls and country-fixed effects (regressions without controls are introduced in the appendix). As it is indicated in the table, an increase of one standard deviation on the *overestimation index* is associated with an average increase of between 0.03 and 0.06 standard deviations in the four outcome variables related to weapons carrying (police, security guards, citizens at home, and citizens in the street). These increments are all statistically significant. In other words, the higher a person overestimates his or her performance in answering general knowledge questions, the more he or she agrees that police, private guards, and citizens should carry weapons. Similarly, the principal component of overplacement (comprising decisions, morality, responsibility)—standardized—is always positively correlated and statistically significant. A one standard deviation increase in overplacement increases between 0.04 and 0.07 standard deviations in all four outcome variables related to carrying weapons. This means that people who overplace themselves

¹⁷For summary statistics and regression analysis, see Section A.2.3 in the Appendix.

¹⁸Full sets of regressions are presented in Appendix A.3.

are more prone to accept gun ownership and carry. As it will be discussed, these results are robust across specifications and variables.

Table 2 presents the results for the variables related to resisting a robbery using the standardized independent variables measuring overestimation according to equation 1. Each panel shows the results of the regressions introducing one of the indexes at a time and both indexes jointly (panel c). The base category of the dependent variables in this multinomial logit is “never offering resistance.” As it can be observed, both overestimation and overplacement tend to increase the probability that an individual would answer that they always would offer resistance or that they would do it with a firearm compared to the probability that they would never do it. For example, an increase in one standard deviation in the overestimation index increases the log odds ratio for always between 7% and 8%. In the case of overplacement, it can reach up to 13%. This means that people who overplace themselves are more prone to accept gun ownership and carry (Table 1 and respond that they would offer resistance if faced with a burglar/robber (Table 2.) These results show that overconfidence seems to be a strong predictor of preferences about guns.

Table 1: Overconfidence and Gun Ownership Preferences

Variable	Police [1]	Security guards [2]	Citizens Home [3]	Citizens Street [4]
Panel A. Overestimation				
Overestimation Index	0.03*** (0.01)	0.03*** (0.01)	0.04*** (0.01)	0.06*** (0.01)
Observations	7,028	7,028	7,028	7,028
R-squared	0.113	0.084	0.169	0.150
Panel B. Overplacement				
Overplacement (PCA)	0.04*** (0.01)	0.07*** (0.01)	0.04*** (0.01)	0.04*** (0.01)
Observations	7,219	7,219	7,219	7,219
R-squared	0.114	0.087	0.169	0.148
Panel C. Overestimation and overplacement				
Overestimation Index	0.03** (0.01)	0.03*** (0.01)	0.03*** (0.01)	0.06*** (0.01)
Overplacement (PCA)	0.04*** (0.01)	0.07*** (0.01)	0.04*** (0.01)	0.04*** (0.01)
Observations	7,019	7,019	7,019	7,019
R-squared	0.114	0.089	0.171	0.152
Controls	Yes	Yes	Yes	Yes
Country FE	Yes	Yes	Yes	Yes
Mean value of dep. var.	5.979	4.844	3.947	2.612

Source: authors' own calculations. Notes: Each column shows the regression coefficients and the robust standard errors in parentheses corresponding to OLS estimations of linear models using both standardized dependent and independent variables. Panels A and B present the coefficients of models that include only one measure of overconfidence, while panel C shows the coefficients of a model that includes both measures as independent variables. *** $p < 0.01$, ** $p < 0.05$, * $p < 0.1$. Controls include: age, gender, marital status, education level, employment, trust (justice system, parliament, police and president) and life satisfaction. All panels include controls and country fixed effects. Survey questions used for the construction of the dependent and independent variables are available in Appendix A.1.

Table 2: Overconfidence and Willingness to Offer Resistance in a Robbery

Variable	In the street			At home: Alone			At home: With family	
	Knife [1]	Firearm [2]	Always [3]	Knife [4]	Firearm [5]	Always [6]	Equal weapon [7]	Always [8]
Panel A. Overestimation								
Overestimation Index	-0.01 (0.05)	-0.03 (0.04)	0.07* (0.04)	0.03 (0.05)	0.01 (0.03)	0.07* (0.04)	0.05* (0.03)	0.08** (0.04)
Observations	7,020	7,020	7,020	7,024	7,024	7,024	7,021	7,021
Panel B. Overplacement								
Overplacement (PCA)	0.05 (0.05)	0.13*** (0.04)	0.05 (0.04)	-0.03 (0.05)	0.12*** (0.03)	0.06 (0.04)	0.05* (0.03)	-0.01 (0.04)
Observations	7,210	7,210	7,210	7,215	7,215	7,215	7,212	7,212
Panel c. Overestimation and overplacement								
Overestimation Index	-0.01 (0.05)	-0.03 (0.04)	0.07* (0.04)	0.03 (0.05)	0.01 (0.03)	0.07* (0.04)	0.05* (0.03)	0.08** (0.04)
Overplacement (PCA)	0.06 (0.05)	0.13*** (0.04)	0.06 (0.04)	-0.02 (0.05)	0.12*** (0.03)	0.07* (0.04)	0.06** (0.03)	0.00 (0.04)
Observations	7,011	7,011	7,011	7,015	7,015	7,015	7,012	7,012
Controls	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Country FE	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Mean value of dep. var.	0.076	0.161	0.159	0.083	0.265	0.165	0.281	0.162

Source: authors' own calculations. Notes: Each column shows the regression coefficients and the robust standard errors in parentheses corresponding to a multinomial logistic model using standardized independent variables. The base category of the dependent variables is "never offering resistance". Panels A and B present the coefficients of models that include only one measure of overconfidence, while panel C shows the coefficients of a model that includes both measures as independent variables. *** $p < 0.01$, ** $p < 0.05$, * $p < 0.1$. Controls include: age, gender, marital status, education level, employment, trust (justice system, parliament, police and president) and life satisfaction. All panels include controls and country fixed effects. Survey questions used for the construction of the dependent and independent variables are available in Appendix A.1.

4 Alternative specifications and robustness exercises

4.1 Alternative specifications

Running the same baseline regressions as above without controls (Tables A.9 and A.10) or without standardizing the variables (Tables A.11 and A.12) does not change the results. Similarly happens with alternative codings of the dependent variables. For example, replacing the variable regarding gun ownership with a binary variable defined as agreement when the respondent selects 5 to 7 shows the same patterns (Table A.13). An increase of one standard deviation in overestimation and overplacement increases the probability that the individual will agree with the possibility that guards and citizens own and carry guns between 1% and 3%. Alternatively, because the question about gun ownership goes from 1 to 7 in terms of agreement, we run an ordered logit model. Once more, results do not change. Both variables are positive and highly significant (Table A.14). Results are also robust to

leaving one country out at a time (Tables A.15 and A.16), which indicates that they are not driven by respondents in one particular country.

4.2 Overplacement variables

The overplacement variable used so far summarizes the answers to questions about responsibility, decisions, and morality. Considering them in one composite index, introducing them individually but jointly in the regressions, or one by one could have different implications for the analysis. For that reason, we look at the effect of introducing them one by one (as a binary variable coded one for those who believe they are above the average) and find that they all show positive and significant effects on gun-carrying preferences and willingness to resist a robbery (Tables A.17 and A.18). Running the regressions with the individual variables in the same regression instead of the composite index shows the same patterns than before. The regression results show that considering the overplacement variables individually does not change the results for the overestimation index (Tables A.19 and A.20). Regarding overplacement, most of the effect comes from overplacement regarding decision-making (the respondent views himself or herself as better than average at making decisions). Individuals who are overplaced in decision-making are between 0.09 and 0.11 standard deviations more likely to agree that security guards and citizens should be able to carry guns than those who are not overplaced. It also increases the log odds ratio for resisting robberies between 13% and 33%. Both sets of results seem to indicate that each one of the variables matter for gun preferences but “decisions” may be capturing better the effect of overplacement on gun preferences.

Respondents were also asked about overplacement directly regarding weapons. Specifically, “If you had a weapon, do you think you would use it more or less responsibly than the average citizen?”. Only about 10% answered that they would be less responsible than the average individual. As expected, including this variable in the analysis is highly significant, which is in line with expectations (Tables A.21 and A.22). Those who believe that they are better than the average are more willing to accept the existence of guns in society (between 0.05 and 0.16 standard deviations depending on the dependent variable). They also believe that they would confront potential robbers if faced with the situation (it increases the log odds ratio up to 51%.)

One final issue regarding the overplacement variables is that while the responses show the existence of an “above-average effect” –that is, more than half of the population believe they are better than half, and very few believe they behave worse than the average individual– it could still be the case that some of the individuals are in fact more responsible or moral, make better decisions, or handle weapons more responsibly than the average. In order to account for this possibility, we interact the overplacement variable with a variable that measures how successful they are in answering two simple mathematical questions. The first one offers four alternative additions and the respondent has to identify the one that adds to 100 (the options are 38+52, 66+44, 53+47, and 51+59.) The second question asks respondents to identify how many triangles are in a figure. Our assumption here is that those people who can’t

answer these simple questions correctly are less likely to be among the group that makes better decisions even if they declare so. The regression results show that overplacement seems to have a larger effect on those who fail the math question than those who get it right. In other words, those who declare themselves better than the average individual but are not able to answer some simple mathematical questions are more likely to respond that they accept more guns and are more willing to resist a robbery than those who answered the math questions correctly (Tables [A.23](#) and [A.24](#).)

4.3 Overestimation variables

Regarding overestimation, in the baseline regressions, we have used the variable constructed according to equation 1. The same variable can be constructed using the responses to the individual variables (equation 2.) Again, the results are the same as before (Tables [A.25](#) [A.26](#).)

One remaining issue with the overestimation variables is that they are negatively correlated with the ability of the individual to answer correctly. That is, the probability of being overconfident grows with the inability to answer the questions. In other words, it is more likely that a person will be considered overconfident when they answer no question correctly than when they answer all of them correctly. One possible answer to this problem would be to ask a ‘large enough’ number of questions to reduce this correlation. With the available data, other possibilities arise. First, we construct a binary overestimation index that takes the value of one independently of the number of answers the respondent wrongly thought had been answered correctly. Once more, results do not change. Individuals who overestimate their abilities are more likely to answer that they agree with police, guards, and citizens carrying guns, and they are also more likely to answer that they would always resist a robbery compared to answering that they would never do it (Tables [A.27](#) and [A.28](#).)

Finally, we condition the number of questions individuals thought they had answered correctly with the number of questions they correctly answered. Given that most of the respondents had between 4 and 8 right answers, we concentrate the analysis on these individuals. Again, even in these very restricted setting, results show that having a larger number of estimated answers for each level of actual correct answers increase the probability that they are going to answer that they accept guns ownership and that they are going to resist a robbery (Tables [A.29](#) and [A.30](#).)

5 Conclusions

We present novel evidence about gun preferences in six of the most populous countries in the Americas. The main focus of our analysis is the link between overconfidence and gun preferences. We find that higher levels of overconfidence are positively correlated with permissive gun preferences. We also find that overconfidence is positively correlated with a person’s self-declared inclination to resist a robbery. These results are consistent with the

two different measures of the variable, overestimation and overplacement. Moreover, they are surprisingly robust under a series of different specifications, such as measuring overconfidence using a single index or by estimating the joint relationship of its several dimensions. The association between overconfidence and individual gun preferences is even higher when we consider the individual's self-assessment of how responsibly he or she would use a weapon.

Given that overconfidence is associated with more risk-taking and fewer safety-oriented attitudes, the positive correlation between overconfidence and gun ownership could explain many accidental deaths and shootings. Moreover, if regulators and politicians do not take into account that individual decision-making and political choices are affected by a behavioral bias, the overall level of guns in society may be higher than the socially optimum level.

There is plenty of experience in other areas—such as seat-belt use and alcohol and cigarette consumption—where overconfidence initially led to inefficient equilibria. Efforts to correct the biases of individuals confronted with making decisions about guns should be a priority, especially in regulatory contexts. There are ways to reduce overconfidence. Providing information about actual performance and the risks entailed by wrong choices is a first step towards that goal. Making individuals reflect on their choices—valid for legislators, voters, and gun owners—may also help correct observed biases.

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A Appendix

A.1 Questionnaire (specific sections)

A.1.1 Gun ownership questions

- *Given the levels of crime in the country, to what extent do you agree with the following statements?*

Strongly disagree							Strongly Agree	
	1	2	3	4	5	6	7	

1. *The police must carry weapons*
2. *Private security guards must be able to use firearms*
3. *Citizens should be able to have weapons in their homes*
4. *Citizens should be able to carry weapons in the street*

A.1.2 Robbery reaction questions

- *Imagine you are walking down the street by yourself at night, and a criminal tries to rob you. You are not sure if your attacker is armed. What would be your reaction?*

1. *I would never offer resistance to prevent the robbery*
2. *I would offer resistance to try to prevent the robbery only if I had a knife (or similar weapon) to defend myself*
3. *I would offer resistance to try to prevent the robbery only if I had a firearm to defend myself*
4. *I would always offer resistance to try to prevent the robbery, even if I did not have a weapon*

- *Imagine now that you are at home, by yourself, and you encounter a burglar inside your house. You are not sure if the intruder is armed. What would be your reaction?*

1. *I would never offer resistance to prevent burglary*
2. *I would offer resistance to try to prevent burglary only if I had a knife (or similar weapon) to defend myself*
3. *I would offer resistance to try to prevent burglary only if I had a firearm to defend myself*
4. *I would always offer resistance to try to prevent the burglary, even if I did not have a weapon*

- *Imagine now that you are at home with your family (spouse and children if you have them, or parents and siblings), and you encounter a burglar inside your house. You notice that the intruder is armed. What would be your reaction?*
 1. *I would never offer resistance to prevent burglary*
 2. *I would offer resistance to try to prevent the burglary only if I had a weapon similar to that of the burglar to defend myself*
 3. *I would always offer resistance to try to prevent the burglary, even if I did not have a weapon*

A.1.3 Overconfidence questions

- *In what country was the singer Rihanna born?*
 1. *United States*
 2. *Jamaica*
 3. *Barbados*
 4. *Bahamas*
- *How confident are you that you chose the correct answer?*
 1. *Not at all confident*
 2. *A little*
 3. *Somewhat*
 4. *Very confident*
- *Which is the planet closest to the sun?*
 1. *Jupiter*
 2. *Venus*
 3. *Earth*
 4. *Mercury*
- *How confident are you that you chose the correct answer?*
 1. *Not at all confident*
 2. *A little*
 3. *Somewhat*
 4. *Very confident*

- *How many minutes are in a day?*
 1. *600*
 2. *1440*
 3. *1600*
 4. *6000*
- *How confident are you that you chose the correct answer?*
 1. *Not at all confident*
 2. *A little*
 3. *Somewhat*
 4. *Very confident*
- *Who was the first person to set foot on the moon?*
 1. *Buzz Aldrin*
 2. *Neil Armstrong*
 3. *Yuri Gagarin*
 4. *Michael Collins*
- *How confident are you that you chose the correct answer?*
 1. *Not at all confident*
 2. *A little*
 3. *Somewhat*
 4. *Very confident*
- *Which team won the 2014 soccer World Cup?*
 1. *Germany*
 2. *Brazil*
 3. *France*
 4. *Spain*
- *How confident are you that you chose the correct answer?*
 1. *Not at all confident*
 2. *A little*

3. *Somewhat*
 4. *Very confident*
- *Which company did Bill Gates start?*
 1. *Facebook*
 2. *Google*
 3. *Microsoft*
 4. *IBM*
 - *How confident are you that you chose the correct answer?*
 1. *Not at all confident*
 2. *A little*
 3. *Somewhat*
 4. *Very confident*
 - *What is the highest mountain in the world?*
 1. *Kilimanjaro*
 2. *Everest*
 3. *Fuji*
 4. *Aconcagua*
 - *How confident are you that you chose the correct answer?*
 1. *Not at all confident*
 2. *A little*
 3. *Somewhat*
 4. *Very confident*
 - *Who is the president of China?*
 1. *Hu Jintao*
 2. *Xi Jinping*
 3. *Moon Jae-in*
 4. *Kim Jong-un*
 - *How confident are you that you chose the correct answer?*

1. *Not at all confident*
 2. *A little*
 3. *Somewhat*
 4. *Very confident*
- *If we are in the year MCMLXXIX, that is equivalent to:*
 1. *1999*
 2. *2019*
 3. *1979*
 4. *2009*
 - *How confident are you that you chose the correct answer?*
 1. *Not at all confident*
 2. *A little*
 3. *Somewhat*
 4. *Very confident*
 - *Of the nine general knowledge questions you answered, how many do you think you answered correctly?*

0	1	2	3	4	5	6	7	8	9
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A.1.4 Overplacement questions

- *Do you consider yourself more or less responsible than the average citizen?*
 1. *Less responsible*
 2. *More responsible*
- *Do you consider your ability to make decisions to be greater than, equal to, or less than that of the average citizen?*
 1. *Less than average*
 2. *Equal*
 3. *Greater than average*

- *Compared to the average citizen, do you consider that your level of morality is greater than, equal, or lower than average?*
 1. *Less than average*
 2. *Equal*
 3. *Greater than average*
- *If you had a weapon, do you think you would use it more or less responsibly than the average citizen?*
 1. *Less than average*
 2. *Equal*
 3. *Greater than average*

A.2 Summary Statistics

Table A.1: Summary statistics of database’s variables

Factors	Variable	Observations	Mean	SD	Min	Max
Demographics	Female	7263	0.53	0.50	0.00	1.00
	Age	7273	44.46	15.81	18.00	94.00
	Education	7276	12.93	3.17	0.00	18.00
	Employed	7276	0.62	0.49	0.00	1.00
	Retired	7276	0.09	0.28	0.00	1.00
	Income (levels)	6002	2.64	1.04	1.00	4.00
	Marital status (single)	7276	0.29	0.45	0.00	1.00
	Marital status (married)	7276	0.60	0.49	0.00	1.00
	Marital status (widow)	7276	0.03	0.18	0.00	1.00
	Marital status (divorced)	7276	0.08	0.27	0.00	1.00
	Elementary school level	7276	0.96	0.19	0.00	1.00
	High school level	7276	0.70	0.46	0.00	1.00
College level	7276	0.27	0.45	0.00	1.00	
Perception	Trust in government	7266	2.41	1.50	1.00	8.00
	Trust in media	7263	3.03	2.07	1.00	8.00
	Trust in judiciary	7268	2.64	1.56	1.00	8.00
	Trust in police	7271	3.40	1.72	1.00	8.00
	Satisfaction with life	7272	1.98	1.21	1.00	5.00
Overestimation	Index	7071	0.00	1.86	-8.00	9.00
	Mean confidence in general knowledge questions	7276	3.11	0.57	1.00	4.00
	Total estimated correct answers	7276	5.70	1.90	0.00	9.00
	Total observed correct answers	7071	5.71	1.80	0.00	9.00
	Overconfident (dummy)	7071	0.38	0.48	0.00	1.00
Overplacement	Responsibility: Less	7276	0.10	0.30	0.00	1.00
	Responsibility: More	7276	0.90	0.30	0.00	1.00
	Ability to make decisions: Less	7275	0.03	0.17	0.00	1.00
	Ability to make decisions: Equal	7275	0.59	0.49	0.00	1.00
	Ability to make decisions: More	7275	0.38	0.49	0.00	1.00
	Morality: Less	7267	0.03	0.17	0.00	1.00
	Morality: Equal	7267	0.46	0.50	0.00	1.00
	Morality: More	7267	0.51	0.50	0.00	1.00
	Responsibility when using weapons: Less	7260	0.10	0.31	0.00	1.00
Responsibility when using weapons: Equal	7260	0.25	0.43	0.00	1.00	
Responsibility when using weapons: More	7260	0.65	0.48	0.00	1.00	
Gun ownership preferences	Police	7274	5.98	1.53	1.00	7.00
	Guards	7274	4.84	1.94	1.00	7.00
	Citizens: Home	7273	3.95	2.31	1.00	7.00
	Citizens: Street	7273	2.61	2.03	1.00	7.00
Would offer resistance in a robbery	Street: Never	7265	0.60	0.49	0.00	1.00
	Street: Only with a knife	7265	0.08	0.26	0.00	1.00
	Street: Only with a firearm	7265	0.16	0.37	0.00	1.00
	Street: Always	7265	0.16	0.37	0.00	1.00
	Home alone: Never	7270	0.49	0.50	0.00	1.00
	Home alone: Only with a knife	7270	0.08	0.28	0.00	1.00
	Home alone: Only with a firearm	7270	0.26	0.44	0.00	1.00
	Home alone: Always	7270	0.16	0.37	0.00	1.00
	Home with family: Never	7266	0.56	0.50	0.00	1.00
	Home with family: Only with equal weapon	7266	0.28	0.45	0.00	1.00
Home with family: Always	7266	0.16	0.37	0.00	1.00	

$N=7298$

A.2.1 Gun Preferences

Summary statistics of the dependent variables by country show that 90% of the respondents agree with the statement that the police should be allowed to carry guns; 70% agree that private security guards should be permitted to do so. In contrast, only 21% of respondents support allowing citizens to carry guns in the street, with 48% supporting the right of citizens to keep guns in their home. Table A.7 shows descriptive statistics at the country level of the variables of interest. The table reveals sizeable differences in gun preferences across countries. Support for police carrying guns is greater in Chile and Brazil. The picture is different with respect to citizens keeping guns in their homes or carrying them in the street. Argentina, Brazil, Chile, and Colombia show similar distributions, being less supportive of citizens carrying or keeping guns, whereas Mexico and the United States are more supportive. In terms of resisting a robbery in the street and at home, respondents from the United States show more willingness to resist than respondents in other countries.

Table A.2: Descriptive statistics: Gun preferences by country (Dummies)

Country	Statistic	Gun ownership				Resistance to robbery		
		Police	Guards	Citizens _H	Citizens _S	Street	Home _A	Home _F
Argentina	Median	1.00	1.00	0.00	0.00	0.00	0.00	0.00
	Mean	0.90	0.60	0.38	0.15	0.43	0.49	0.43
	SD	0.30	0.49	0.48	0.35	0.50	0.50	0.49
Brazil	Median	1.00	1.00	0.00	0.00	0.00	0.00	0.00
	Mean	0.95	0.78	0.46	0.20	0.25	0.42	0.32
	SD	0.21	0.42	0.50	0.40	0.43	0.49	0.47
Chile	Median	1.00	1.00	0.00	0.00	0.00	0.00	0.00
	Mean	0.93	0.61	0.38	0.09	0.33	0.43	0.37
	SD	0.26	0.49	0.49	0.28	0.47	0.49	0.48
Colombia	Median	1.00	1.00	0.00	0.00	0.00	1.00	0.00
	Mean	0.88	0.80	0.34	0.18	0.41	0.51	0.43
	SD	0.32	0.40	0.47	0.38	0.49	0.50	0.50
Mexico	Median	1.00	1.00	1.00	0.00	0.00	1.00	0.00
	Mean	0.92	0.77	0.59	0.22	0.37	0.53	0.48
	SD	0.28	0.42	0.49	0.41	0.48	0.50	0.50
USA	Median	1.00	1.00	1.00	1.00	1.00	1.00	1.00
	Mean	0.86	0.69	0.77	0.52	0.64	0.75	0.68
	SD	0.34	0.46	0.42	0.50	0.48	0.43	0.47
Total	Median	1.00	1.00	0.00	0.00	0.00	1.00	0.00
	Mean	0.91	0.71	0.48	0.21	0.40	0.51	0.44
	SD	0.29	0.45	0.50	0.41	0.49	0.50	0.50

Source: Authors' calculations Notes: All variables are dummies. Gun ownership variables take value 1 when the individual agrees with the statement. Those who did not agree nor disagree were not considered. Resistance to robbery variables take value 1 when the respondent answers that he or she would offer resistance either always or only when carrying a weapon. Subscripts *H*, *S*, *A*, and *F* stand for "Home", "Street", "Alone", and "With family", respectively.

A.2.2 Overconfidence

Table A.3 shows the descriptive stats of all the sample regarding both measures of overconfidence variables. IN terms of over-placement measures, on average, individuals on our sample consider themselves to be better than the average individual in the population. The dimensions where individuals over-place themselves above average the most is in their responsibility (in general) and in their responsibility of using weapons. When measures in terms of overestimation with the number of questions, we see that the majority underestimates the number of right answers given, and the most are in the middle point of no mistakes.

Table A.3: Overconfidence variable distributions

Variable	Category	Frequency	Percent	Cumulative (%)
Responsibility	Less	720	9.8	9.8
	More	6556	90.1	100
Ability to make decisions	Less	211	2.9	2.9
	Equal	4268	58.6	61.5
	More	2796	38.4	100
Morality	Less	217	2.9	2.9
	Equal	3335	45.8	48.8
	More	3715	51.1	100
Responsibility when using weapons	Less	759	10.4	10.4
	Equal	1793	24.6	35.1
	More	4708	64.8	100
Overestimation	-8	1	0.0	0.0
	-7	3	0.0	0.0
	-6	9	0.1	0.1
	-5	43	0.6	0.6
	-4	152	2.1	2.1
	-3	374	5.2	7.7
	-2	801	11.3	18.6
	-1	1319	18.6	37.2
	0	1695	23.9	60.1
	1	1344	19.0	81.1
	2	752	10.6	91.8
	3	352	4.9	96.8
	4	135	1.9	98.7
5	58	0.8	99.5	
6	23	0.3	99.8	
7	5	0.0	99.9	
8	2	0.0	99.9	
9	3	0.0	100	

Table A.6 presents descriptive statistics by country of the overconfidence variables in their dummy version (to simplify analysis). *Overconfidence* of respondents is measured using the dummy of the *overestimation index*. This figure shows the proportion of those individuals that overestimate at least 1 correct answer of the the nine general questions. The direct-

measurement approach to *overplacement* asked respondents to compare themselves with the average citizen of their country on four issues (responsibility, ability to make decisions, morality, and responsibility specifically related to the use of weapons). The dummy version of these variables show that on average 90% of the people consider themselves more responsible than the rest, 65% consider themselves better in handling weapons and in moral terms (51%). Surprisingly in the only dimension where the average proportion of people do not overplace themselves is in their ability to make decisions. These two versions of overconfidence capture different dimensions of the behavioral trait, as numbers show.

Table A.4: Descriptive statistics: Overconfidence by country (Dummies)

Country	Statistic	Overestimation	Overplacement			
			Responsibility	Decisions	Morality	Weapons
Argentina	Median	0.00	1.00	0.00	0.00	1.00
	Mean	0.34	0.89	0.28	0.46	0.60
	SD	0.47	0.31	0.45	0.50	0.49
Brazil	Median	0.00	1.00	0.00	0.00	1.00
	Mean	0.36	0.82	0.28	0.33	0.60
	SD	0.48	0.39	0.45	0.47	0.49
Chile	Median	0.00	1.00	0.00	1.00	1.00
	Mean	0.39	0.93	0.42	0.55	0.70
	SD	0.49	0.26	0.49	0.50	0.46
Colombia	Median	0.00	1.00	0.00	1.00	1.00
	Mean	0.47	0.94	0.47	0.64	0.70
	SD	0.50	0.24	0.50	0.48	0.46
Mexico	Median	0.00	1.00	0.00	1.00	1.00
	Mean	0.42	0.92	0.44	0.63	0.72
	SD	0.29	0.27	0.50	0.48	0.45
USA	Median	0.00	1.00	0.00	0.00	1.00
	Mean	0.25	0.91	0.41	0.43	0.54
	SD	0.43	0.29	0.49	0.49	0.50
Total	Median	0.00	1.00	0.00	1.00	1.00
	Mean	0.38	0.90	0.38	0.51	0.65
	SD	0.48	0.30	0.49	0.50	0.48

Notes: All variables are dummies. Overestimation is a dummy that takes value 1 when the individual thinks she or he has answered more questions than she actually has. All the other dummies take value 1 when the individual thinks she is better than the average citizen in each category. Source: Authors' calculations.

In terms of average overconfidence, Argentina, Brazil and the United States display higher levels of underestimation, in contrast with Chile, Colombia, and Mexico, which show above average levels of overestimation. In terms of overplacement, Argentina and Brazil show below average levels of overplacement in all dimensions in contrast with Chile, Colombia, Mexico and the US.

Table A.5: Descriptive statistics: Estimated and actual number of rights answers by country

Country	Statistic	Estimated number of right answers (end q)	Estimated number of right answers (q by q)	Actual number of right answers
Argentina	Median	6	7	6
	Mean	5.71	6.83	5.84
	SD	1.81	2.03	1.77
Brazil	Median	5	7	5
	Mean	5.14	6.05	5.27
	SD	1.91	2.41	1.77
Chile	Median	6	8	6
	Mean	5.89	7.1	5.88
	SD	1.84	1.95	1.75
Colombia	Median	6	8	6
	Mean	6.06	7.2	5.62
	SD	1.83	1.97	1.86
Mexico	Median	7	8	6
	Mean	6.25	7.27	6.05
	SD	1.77	1.86	1.69
USA	Median	5	6	6
	Mean	5.02	5.39	5.6
	SD	1.94	2.25	1.86
Total	Median	6	7	6
	Mean	5.7	6.68	5.71
	SD	1.9	2.19	1.8

Source: Authors' calculations. Notes: The "end q" method refers to the explicit question on the number of correct answers. The "q by q" method counts the number of questions in which the respondent expresses being somewhat or very confident with their answers.

As we can appreciate in the table, the total number of right estimated answers is different on the two ways of asking the persons how confident they are on their answers. When the surveyed person are immediately asked how confident they are that their answer is correct, the person overestimates correctness in a bigger proportion than if they are asked at last (approximately 1 extra response). In a different fashion, if the person is asked at last how many questions they think they have answer properly, their right answered question estimation goes down more closely to reality. This effect could be due to the law of large numbers (when adding the errors of each question mentally, they cancel out), or because when people is not "in the heat of the moment" they might be more accurate.

Table A.6: Descriptive statistics: Percentage of overconfident individuals by country with different Overconfidence Indexes

Country	Overconfident (regular end q index)	Overconfident (alternative q by q index)
Argentina	0.34	0.62
Brazil	0.36	0.55
Chile	0.39	0.65
Colombia	0.47	0.71
Mexico	0.42	0.66
USA	0.25	0.35
Total	0.38	0.60

Source: Authors' calculations. Notes: The "end q" method refers to the explicit question on the number of correct answers. The "q by q" method counts the number of questions in which the respondent expresses being somewhat or very confident with their answers.

After the last question was asked, individuals were asked how many questions they believed they have answered correctly (in numbers). We use this information to construct the "Overconfidence index". We then re-coded in a dummy version, where individuals that believed they have answered correctly more questions that they effectively had, were coded as 1. This variable is 1 if the quantity of responses estimated were more than the right ones (at least 1 more than the correct ones). Those under-confident are coded to 0.

The "Overconfident 2 index" was made by coding each of the successive questions after each content question, that asked the individuals how confident they were to have answered correctly. If they were confident or very confident that they answered correctly after each question, they are coded to 1. To make the index, we added each of these re-codes, up to each of the 9 question. To turn it into a dummy, we used the same procedure as before.

We can appreciate that the proportion of individual that can be characterized as "overestimating" their right answers is radially higher when subjects are immediately asked their guess after the question.

Table A.7: Correlation between Overestimation Indexes

	Overestimation index	Overestimation alt	Overestimation random (7)
Overestimation index	1.0000		
Overestimation alt.	0.6497	1.0000	
Overestimation random (7)	0.6115	0.9400	1.0000

Source: Authors' calculations

Overestimation Index, is the regular index, composed with the difference between the number of estimated correct answers by each individual (grouped in the standard questionnaire of 9) and the number of questions answered correctly. Overestimation alt, uses the difference between the answers the individual was (confident or very confident) of and the total number of correct answers. Finally, overestimation random 7, was the same as the former index (one by one, using confidence and very confidence as 1), but this was constructed using 7 questions chosen at random for each individual.

A.2.3 Who are the overconfident ones?

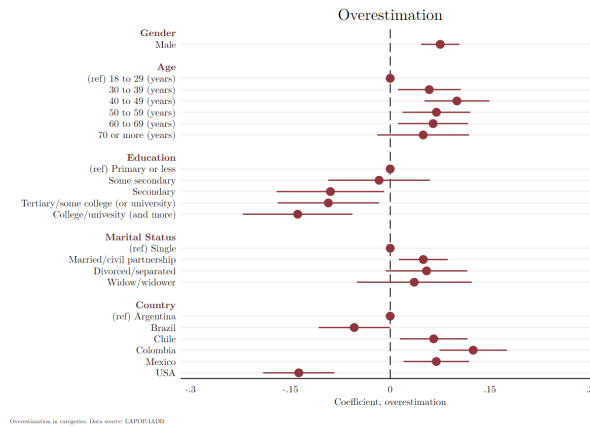
Table A.8: Individual traits of overconfidence

Variable	Category	Overestimation	Overplacement			
			Responsibility	Decision	Morality	Weapons
Gender	Female	1.96	0.90	2.29	2.47	2.50
	Male	2.04	0.91	2.43	2.50	2.60
Age category	18 to 29	1.91	0.83	2.31	2.40	2.60
	30 to 39	2.00	0.89	2.35	2.47	2.56
	40 to 49	2.05	0.91	2.38	2.50	2.54
	50 to 59	2.02	0.93	2.35	2.50	2.51
	60 to 69	2.01	0.94	2.39	2.55	2.54
	70 or more	1.96	0.96	2.38	2.53	2.42
Education	Primary or less	2.06	0.85	2.22	2.34	2.36
	Some secondary	2.06	0.86	2.25	2.39	2.49
	Secondary	1.96	0.89	2.28	2.49	2.52
	Some college	1.97	0.92	2.41	2.53	2.60
	College-University	1.94	0.95	2.55	2.56	2.60
Marital Status	Single	1.92	0.86	2.34	2.45	2.54
	Married/Civil partnership	2.02	0.92	2.36	2.49	2.55
	Divorced/Separated	2.01	0.92	2.39	2.51	2.51
	Widow/Widower	1.96	0.94	2.30	2.53	2.47
Income level	2SD below mean	2.05	0.84	2.25	2.38	2.47
	1SD below mean	1.97	0.89	2.29	2.42	2.49
	1SD above mean	1.99	0.92	2.40	2.52	2.58
	2SD above mean	1.95	0.90	2.40	2.50	2.53

Source: Authors' calculations.

This section contrasts the two measures of overconfidence (overestimation and the four overplacement variables) with some general variables such as gender, age, education, marital status, income, and nationality. To simplify the analysis, overplacement variables (which are categorical) were used directly. A three-category version of overestimation (low, medium, high) was constructed, depending on the average score and the standard deviation. Average respondents (one standard deviation above or below) were categorized as medium. Those scoring no more than one standard deviation below were categorized as low. Those scoring at least one standard deviation above were categorized as high. We performed statistical tests to determine whether the differences observed in the comparisons were statistically significant.

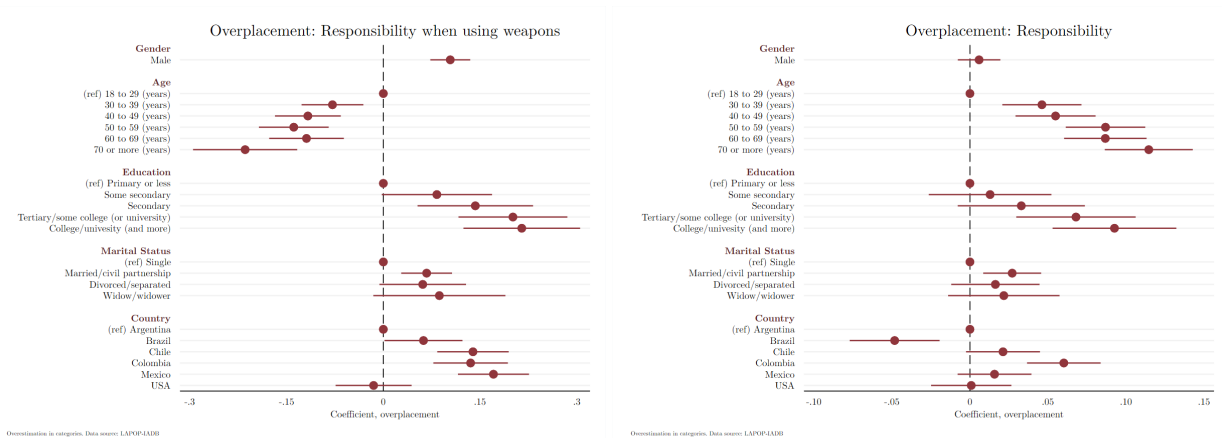
Figure A.1: Overestimation index



Source: Authors' own elaboration.

In terms of gender, men are systematically more overconfident than women, whether measured in terms of overestimation or the overplacement variables (responsibility, decision, morality, and responsible use of weapons). These differences were statistically significant. Regarding age groups, respondents in their forties tended to be more overestimating than others, while those over 70 overplaced themselves with respect to responsibility and decisions. Those in their forties also overplaced themselves with respect to decisions. Respondents in their fifties overplaced themselves on morality, while those in their twenties did so with respect to weapons use.

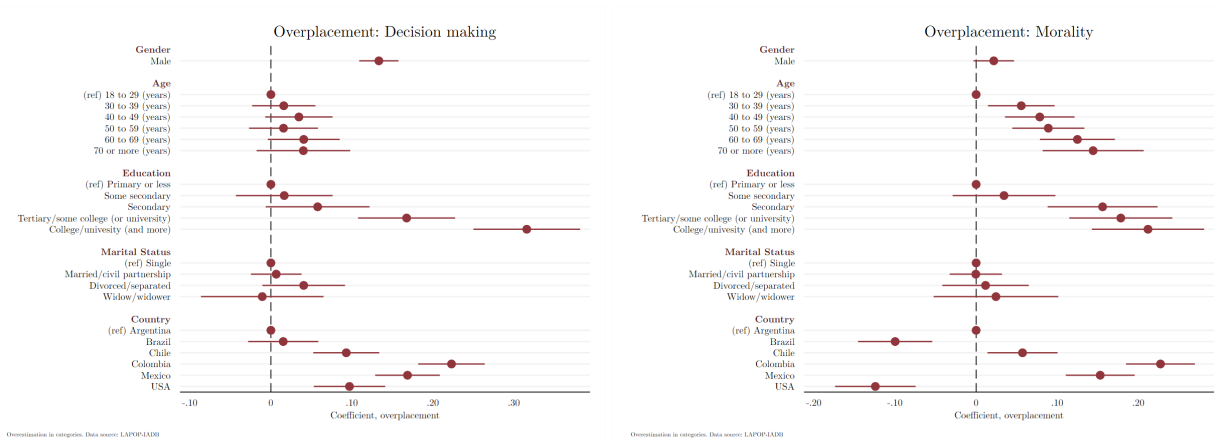
Figure A.2: Overplacement: Responsibility in general and responsibility when using weapons



Source: Authors' own elaboration.

Married respondents showed higher levels of overestimation and were the most overconfident regarding general responsibility and responsible weapons use. Regarding overplacement on weapons use, single respondents overplaced themselves at similar levels. The divorced were also overconfident in the areas of responsibility (where they showed levels similar to married persons) and decision making. Widows and widowers evinced greater overplacement in the area of morality.

Figure A.3: Overplacement: Decision-making and morality



Source: Authors' own elaboration.

Finally, in terms of income, those in the average range (up to one standard deviation above the mean), overplaced themselves in terms of responsibility, decisions, morality, and responsible gun use. The same does not recur with overestimation, where those falling 1–2 standard deviations below the mean placed themselves higher. This group is the second highest in overplacement. It is important to mention that income has many missing observations in each country (and is missing entirely in Chile), so it may not be a representative statistic.

A.3 Results from alternative specifications of the model

A.3.1 Base regressions without controls

Table A.9: Overconfidence and Gun Ownership Preferences, No Controls

Variable	Police [1]	Security guards [2]	Citizens Home [3]	Citizens Street [4]
Overestimation Index	0.06*** (0.01)	0.05*** (0.01)	0.06*** (0.01)	0.07*** (0.01)
Overplacement (PCA)	0.08*** (0.01)	0.07*** (0.01)	0.05*** (0.01)	0.04*** (0.01)
Observations	7,060	7,060	7,059	7,059
R-squared	0.025	0.039	0.087	0.098
Controls	No	No	No	No
Country FE	Yes	Yes	Yes	Yes

Source: authors' own calculations. Notes: Each column shows the regression coefficients and the robust standard errors in parentheses corresponding to OLS estimations of linear models using both standardized dependent and independent variables. *** $p < 0.01$, ** $p < 0.05$, * $p < 0.1$. No controls are included apart from country fixed effects. Survey questions used for the construction of the dependent and independent variables are available in Appendix A.1.

Table A.10: Overconfidence and Willingness to Offer Resistance in a Robbery, No Controls

Variable	In the street			At home: Alone			At home: With family	
	Knife [1]	Firearm [2]	Always [3]	Knife [4]	Firearm [5]	Always [6]	Equal weapon [7]	Always [8]
Overestimation Index	-0.02 (0.05)	-0.00 (0.03)	0.07** (0.04)	0.02 (0.05)	0.03 (0.03)	0.08** (0.04)	0.06* (0.03)	0.09*** (0.04)
Overplacement (PCA)	-0.02 (0.05)	0.14*** (0.04)	0.04 (0.04)	-0.10** (0.05)	0.13*** (0.03)	0.06* (0.04)	0.04 (0.03)	-0.02 (0.04)
Observations	7,052	7,052	7,052	7,056	7,056	7,056	7,052	7,052
Controls	No	No	No	No	No	No	No	No
Country FE	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes

Source: authors' own calculations. Notes: Each column shows the regression coefficients and the robust standard errors in parentheses corresponding to a multinomial logistic model using standardized independent variables. The base category of the dependent variables is “never offering resistance”. *** $p < 0.01$, ** $p < 0.05$, * $p < 0.1$. No controls are included apart from country fixed effects. Survey questions used for the construction of the dependent and independent variables are available in Appendix A.1.

A.3.2 Base regressions with original non-standardized variables

Table A.11: Overconfidence and Gun Ownership Preferences, Non-Standardized Variables

Variable	Police	Security	Citizens	Citizens
	[1]	guards	Home	Street
Overestimation Index	0.02** (0.01)	0.03*** (0.01)	0.04*** (0.01)	0.06*** (0.01)
Overplacement (PCA)	0.05*** (0.02)	0.11*** (0.02)	0.07*** (0.02)	0.07*** (0.02)
Observations	7,019	7,019	7,019	7,019
R-squared	0.114	0.089	0.171	0.152
Controls	Yes	Yes	Yes	Yes
Country FE	Yes	Yes	Yes	Yes

Source: authors' own calculations. Notes: Each column shows the regression coefficients and the robust standard errors in parentheses corresponding to OLS estimations of linear models using the original non-standardized dependent and independent variables. *** $p < 0.01$, ** $p < 0.05$, * $p < 0.1$. Controls include: age, gender, marital status, education level, employment, trust (justice system, parliament, police and president) and life satisfaction. Survey questions used for the construction of the dependent and independent variables are available in Appendix A.1.

Table A.12: Overconfidence and Willingness to Offer Resistance in a Robbery, Non-Standardized Variables

Variable	In the street			At home: Alone			At home: With family	
	Knife	Firearm	Always	Knife	Firearm	Always	Equal weapon	Always
	[1]	[2]	[3]	[4]	[5]	[6]	[7]	[8]
Overestimation Index	-0.01 (0.03)	-0.02 (0.02)	0.04* (0.02)	0.02 (0.03)	0.01 (0.02)	0.04* (0.02)	0.03* (0.02)	0.04** (0.02)
Overplacement (PCA)	0.05 (0.04)	0.10*** (0.03)	0.05 (0.03)	-0.02 (0.04)	0.10*** (0.03)	0.05* (0.03)	0.05** (0.02)	0.00 (0.03)
Observations	7,011	7,011	7,011	7,015	7,015	7,015	7,012	7,012
Controls	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Country FE	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes

Source: authors' own calculations. Notes: Each column shows the regression coefficients and the robust standard errors in parentheses corresponding to a multinomial logistic model using the original non-standardized independent variables. The base category of the dependent variables is "never offering resistance". *** $p < 0.01$, ** $p < 0.05$, * $p < 0.1$. Controls include: age, gender, marital status, education level, employment, trust (justice system, parliament, police and president) and life satisfaction. Survey questions used for the construction of the dependent and independent variables are available in Appendix A.1.

A.3.3 Binary variables for gun ownership preferences

Table A.13: Overconfidence and Gun Ownership Preferences, Binary Dependent Variables

Variable	Police [1]	Security guards [2]	Citizens Home [3]	Citizens Street [4]
Overestimation Index	0.00 (0.00)	0.01* (0.01)	0.02*** (0.01)	0.03*** (0.01)
Overplacement (PCA)	0.00 (0.00)	0.03*** (0.01)	0.02*** (0.01)	0.02*** (0.01)
Observations	6,387	5,770	6,090	6,278
R-squared	0.061	0.088	0.169	0.159
Controls	Yes	Yes	Yes	Yes
Country FE	Yes	Yes	Yes	Yes

Source: authors' own calculations. Notes: Each column shows the regression coefficients and the robust standard errors in parentheses corresponding to OLS estimations of linear models using standardized independent variables and binary dependent variables. Dependent variables are defined as 1 for agreement (answers between 5 to 7) and 0 for disagreement (answers between 1 to 3). Indifferent respondents (answers of 4 in the 1 to 7 scale) are not considered in these regressions. *** $p < 0.01$, ** $p < 0.05$, * $p < 0.1$. Controls include: age, gender, marital status, education level, employment, trust (justice system, parliament, police and president) and life satisfaction. Survey questions used for the construction of the dependent and independent variables are available in Appendix A.1.

A.3.4 Ordered logit model for gun ownership preferences

Table A.14: Overconfidence and Gun Ownership Preferences, Ordered Logit Model

Variable	Police [1]	Security guards [2]	Citizens Home [3]	Citizens Street [4]
Overestimation Index	0.09*** (0.03)	0.07*** (0.02)	0.05** (0.02)	0.08*** (0.02)
Overplacement (PCA)	0.11*** (0.03)	0.15*** (0.02)	0.07*** (0.02)	0.08*** (0.03)
Cutpoint 1	-2.39*** (0.22)	-2.12*** (0.18)	-0.83*** (0.19)	-0.09 (0.19)
Cutpoint 2	-1.83*** (0.21)	-1.46*** (0.18)	-0.25 (0.19)	0.48** (0.19)
Cutpoint 3	-1.13*** (0.21)	-0.83*** (0.18)	0.23 (0.19)	0.94*** (0.19)
Cutpoint 4	-0.21 (0.21)	0.05 (0.18)	0.85*** (0.19)	1.60*** (0.19)
Cutpoint 5	0.53*** (0.21)	0.77*** (0.18)	1.34*** (0.19)	2.10*** (0.19)
Cutpoint 6	1.16*** (0.20)	1.28*** (0.18)	1.74*** (0.19)	2.47*** (0.19)
Observations	7,019	7,019	7,019	7,019
Controls	Yes	Yes	Yes	Yes
Country FE	Yes	Yes	Yes	Yes

Source: authors' own calculations. Notes: Each column shows the regression coefficients and the robust standard errors in parentheses corresponding to an ordered logistic model using standardized independent variables and dependent variables in a 1 to 7 Likert scale. *** $p < 0.01$, ** $p < 0.05$, * $p < 0.1$. Controls include: age, gender, marital status, education level, employment, trust (justice system, parliament, police and president) and life satisfaction. Survey questions used for the construction of the dependent and independent variables are available in Appendix A.1.

A.3.5 “Leave-one-out” regressions by country

Table A.15: Overconfidence and Gun Ownership Preferences, Leave-One-Out Regressions

Variable	Police [1]	Security guards [2]	Citizens Home [3]	Citizens Street [4]
Panel A. Without Argentina				
Overestimation Index	0.02* (0.01)	0.02 (0.01)	0.02 (0.01)	0.04*** (0.01)
Overplacement (PCA)	0.04*** (0.01)	0.07*** (0.01)	0.04*** (0.01)	0.05*** (0.01)
Observations	5,938	5,938	5,938	5,938
R-squared	0.114	0.083	0.189	0.169
Panel B. Without Brazil				
Overestimation Index	0.03* (0.01)	0.04*** (0.01)	0.05*** (0.01)	0.07*** (0.01)
Overplacement (PCA)	0.04*** (0.02)	0.07*** (0.01)	0.04*** (0.01)	0.05*** (0.01)
Observations	5,769	5,769	5,770	5,769
R-squared	0.112	0.086	0.162	0.161
Panel C. Without Chile				
Overestimation Index	0.03** (0.01)	0.04*** (0.01)	0.03*** (0.01)	0.06*** (0.01)
Overplacement (PCA)	0.05*** (0.01)	0.08*** (0.01)	0.05*** (0.01)	0.06*** (0.01)
Observations	5,787	5,788	5,787	5,788
R-squared	0.111	0.086	0.192	0.149
Panel D. Without Colombia				
Overestimation Index	0.04*** (0.01)	0.03** (0.01)	0.03** (0.01)	0.05*** (0.01)
Overplacement (PCA)	0.04*** (0.01)	0.08*** (0.01)	0.04*** (0.01)	0.04*** (0.01)
Observations	5,757	5,757	5,757	5,757
R-squared	0.121	0.092	0.182	0.178
Panel E. Without Mexico				
Overestimation Index	0.03** (0.01)	0.03** (0.01)	0.03*** (0.01)	0.06*** (0.01)
Overplacement (PCA)	0.03** (0.01)	0.07*** (0.01)	0.03*** (0.01)	0.04*** (0.01)
Observations	5,756	5,755	5,755	5,754
R-squared	0.132	0.108	0.192	0.188
Panel F. Without USA				
Overestimation Index	0.03** (0.01)	0.03** (0.01)	0.04*** (0.01)	0.06*** (0.01)
Overplacement (PCA)	0.03** (0.01)	0.06*** (0.01)	0.04*** (0.01)	0.04*** (0.01)
Observations	6,088	6,088	6,088	6,089
R-squared	0.100	0.078	0.112	0.058
Controls	Yes	Yes	Yes	Yes
Country FE	Yes	Yes	Yes	Yes

Source: authors’ own calculations. Notes: Each column shows the regression coefficients and the robust standard errors in parentheses corresponding to OLS estimations of linear models using both standardized dependent and independent variables. *** $p < 0.01$, ** $p < 0.05$, * $p < 0.1$. Controls include: age, gender, marital status, education level, employment, trust (justice system, parliament, police and president) and life satisfaction. All panels include controls and country fixed effects. Survey questions used for the construction of the dependent and independent variables are available in Appendix A.1.

Table A.16: Overconfidence and Willingness to Offer Resistance in a Robbery, Leave-One-Out Regressions

Variable	In the street			At home: Alone			At home: With family	
	Knife [1]	Firearm [2]	Always [3]	Knife [4]	Firearm [5]	Always [6]	Equal weapon [7]	Always [8]
Panel A. Without Argentina								
Overestimation Index	-0.01 (0.05)	-0.05 (0.04)	0.05 (0.04)	0.01 (0.05)	-0.01 (0.03)	0.03 (0.04)	0.03 (0.03)	0.06 (0.04)
Overplacement (PCA)	0.06 (0.06)	0.13*** (0.04)	0.07 (0.04)	-0.02 (0.05)	0.14*** (0.04)	0.10** (0.05)	0.08** (0.03)	0.04 (0.04)
Observations	5,932	5,932	5,932	5,936	5,936	5,936	5,932	5,932
Panel B. Without Brazil								
Overestimation Index	-0.02 (0.05)	-0.02 (0.04)	0.05 (0.04)	0.03 (0.05)	0.04 (0.04)	0.06 (0.04)	0.05 (0.03)	0.08** (0.04)
Overplacement (PCA)	0.05 (0.05)	0.13*** (0.04)	0.05 (0.04)	-0.05 (0.05)	0.11*** (0.04)	0.04 (0.04)	0.03 (0.04)	-0.01 (0.04)
Observations	5,761	5,761	5,761	5,765	5,765	5,765	5,762	5,762
Panel C. Without Chile								
Overestimation Index	0.00 (0.05)	-0.05 (0.04)	0.07* (0.04)	0.00 (0.05)	-0.00 (0.03)	0.06 (0.04)	0.03 (0.03)	0.07* (0.04)
Overplacement (PCA)	0.06 (0.06)	0.14*** (0.04)	0.08* (0.04)	0.00 (0.05)	0.11*** (0.04)	0.07* (0.04)	0.07** (0.03)	0.02 (0.04)
Observations	5,781	5,781	5,781	5,783	5,783	5,783	5,781	5,781
Panel D. Without Colombia								
Overestimation Index	0.01 (0.05)	-0.05 (0.04)	0.06 (0.04)	0.06 (0.05)	-0.00 (0.03)	0.04 (0.04)	0.04 (0.03)	0.06 (0.04)
Overplacement (PCA)	0.06 (0.06)	0.13*** (0.04)	0.02 (0.04)	-0.02 (0.05)	0.12*** (0.04)	0.07 (0.04)	0.06* (0.03)	-0.02 (0.04)
Observations	5,751	5,751	5,751	5,755	5,755	5,755	5,753	5,753
Panel E. Without Mexico								
Overestimation Index	-0.02 (0.05)	-0.02 (0.04)	0.09** (0.04)	0.04 (0.05)	0.02 (0.03)	0.08** (0.04)	0.08** (0.03)	0.09** (0.04)
Overplacement (PCA)	0.05 (0.06)	0.13*** (0.04)	0.08* (0.04)	-0.05 (0.05)	0.13*** (0.04)	0.05 (0.04)	0.06 (0.03)	-0.02 (0.04)
Observations	5,746	5,746	5,746	5,750	5,750	5,750	5,747	5,747
Panel F. Without USA								
Overestimation Index	-0.03 (0.05)	-0.01 (0.04)	0.08** (0.04)	0.04 (0.05)	0.02 (0.03)	0.12*** (0.04)	0.06* (0.03)	0.11*** (0.04)
Overplacement (PCA)	0.12** (0.06)	0.12*** (0.04)	0.05 (0.04)	-0.01 (0.05)	0.12*** (0.03)	0.08* (0.05)	0.07** (0.03)	-0.01 (0.04)
Observations	6,084	6,084	6,084	6,086	6,086	6,086	6,085	6,085
Controls	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Country FE	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes

Source: authors' own calculations. Notes: Each column shows the regression coefficients and the robust standard errors in parentheses corresponding to a multinomial logistic model using standardized independent variables. The base category of the dependent variables is "never offering resistance". *** p<0.01, ** p<0.05, * p<0.1. Controls include: age, gender, marital status, education level, employment, trust (justice system, parliament, police and president) and life satisfaction. All panels include controls and country fixed effects. Survey questions used for the construction of the dependent and independent variables are available in Appendix A.1.

A.3.6 Overplacement components one at a time

Table A.17: Overconfidence and Gun Ownership Preferences, Components One at a Time

Variable	Police [1]	Security guards [2]	Citizens Home [3]	Citizens Street [4]
Panel A: Responsibility				
Overplacement: Responsibility	0.07* (0.04)	0.10** (0.04)	0.03 (0.04)	0.03 (0.04)
Observations	7,229	7,229	7,229	7,229
R-squared	0.112	0.083	0.166	0.146
Panel B: Ability to make decisions				
Overplacement: Decisions	0.06** (0.02)	0.12*** (0.02)	0.12*** (0.02)	0.11*** (0.02)
Observations	7,228	7,228	7,228	7,228
R-squared	0.113	0.085	0.169	0.148
Panel C: Morality				
Overplacement: Morality	0.05** (0.02)	0.11*** (0.02)	0.04* (0.02)	0.04** (0.02)
Observations	7,220	7,220	7,220	7,220
R-squared	0.113	0.085	0.167	0.147
Controls	Yes	Yes	Yes	Yes
Country FE	Yes	Yes	Yes	Yes

Source: authors' own calculations. Notes: Each column shows the regression coefficients and the robust standard errors in parentheses corresponding to OLS estimations of linear models using standardized dependent variables, a standardized overestimation index, and binary indicators for each component of overplacement, which take the value 1 when the respondent express being above the average citizen in that dimension. *** $p < 0.01$, ** $p < 0.05$, * $p < 0.1$. Controls include: age, gender, marital status, education level, employment, trust (justice system, parliament, police and president) and life satisfaction. Survey questions used for the construction of the dependent and independent variables are available in Appendix A.1.

Table A.18: Overconfidence and Willingness to Offer Resistance in a Robbery, Components One at a Time

Variable	In the street			At home: Alone			At home: With family	
	Knife [1]	Firearm [2]	Always [3]	Knife [4]	Firearm [5]	Always [6]	Equal weapon [7]	Always [8]
Panel A: Responsibility								
Overplacement: Responsibility	-0.10 (0.15)	0.16 (0.12)	-0.04 (0.12)	-0.11 (0.14)	0.20* (0.10)	-0.04 (0.12)	0.08 (0.10)	-0.04 (0.12)
Observations	7,220	7,220	7,220	7,225	7,225	7,225	7,222	7,222
Panel B: Ability to make decisions								
Overplacement: Decisions	0.27*** (0.10)	0.25*** (0.07)	0.18** (0.07)	-0.06 (0.10)	0.21*** (0.06)	0.20*** (0.08)	0.08 (0.06)	0.08 (0.07)
Observations	7,219	7,219	7,219	7,224	7,224	7,224	7,221	7,221
Panel C: Morality								
Overplacement: Morality	-0.01 (0.10)	0.17** (0.07)	0.11 (0.07)	-0.08 (0.09)	0.16** (0.06)	0.07 (0.07)	0.06 (0.06)	-0.07 (0.07)
Observations	7,211	7,211	7,211	7,216	7,216	7,216	7,213	7,213
Controls	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Country FE	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes

Source: authors' own calculations. Notes: Each column shows the regression coefficients and the robust standard errors in parentheses corresponding to a multinomial logistic model using standardized independent variables. The base category of the dependent variables is "never offering resistance". *** $p < 0.01$, ** $p < 0.05$, * $p < 0.1$. Controls include: age, gender, marital status, education level, employment, trust (justice system, parliament, police and president) and life satisfaction. Survey questions used for the construction of the dependent and independent variables are available in Appendix A.1.

A.3.7 Disaggregated components of overplacement

Table A.19: Overconfidence Components and Gun Ownership Preferences

Variable	Police [1]	Security guards [2]	Citizens Home [3]	Citizens Street [4]
Overestimation Index	0.03** (0.01)	0.03*** (0.01)	0.03*** (0.01)	0.06*** (0.01)
Overplacement: Responsibility	0.05 (0.04)	0.07 (0.04)	0.00 (0.04)	0.02 (0.04)
Overplacement: Decisions	0.04 (0.03)	0.09*** (0.03)	0.11*** (0.02)	0.10*** (0.02)
Overplacement: Morality	0.03 (0.02)	0.08*** (0.02)	0.00 (0.02)	0.01 (0.02)
Observations	7,019	7,019	7,019	7,019
R-squared	0.114	0.089	0.173	0.153
Controls	Yes	Yes	Yes	Yes
Country FE	Yes	Yes	Yes	Yes

Source: authors' own calculations. Notes: Each column shows the regression coefficients and the robust standard errors in parentheses corresponding to OLS estimations of linear models using standardized dependent variables, a standardized overestimation index, and binary indicators for each component of overplacement, which take the value 1 when the respondent express being above the average citizen in that dimension. *** $p < 0.01$, ** $p < 0.05$, * $p < 0.1$. Controls include: age, gender, marital status, education level, employment, trust (justice system, parliament, police and president) and life satisfaction. Survey questions used for the construction of the dependent and independent variables are available in Appendix A.1.

Table A.20: Overconfidence Components and Willingness to Offer Resistance in a Robbery

Variable	In the street			At home: Alone			At home: With family	
	Knife [1]	Firearm [2]	Always [3]	Knife [4]	Firearm [5]	Always [6]	Equal weapon [7]	Always [8]
Overestimation Index	-0.01 (0.05)	-0.03 (0.04)	0.07* (0.04)	0.03 (0.05)	0.01 (0.03)	0.07* (0.04)	0.05* (0.03)	0.08** (0.04)
Overplacement: Responsibility	-0.15 (0.15)	0.14 (0.13)	-0.09 (0.13)	-0.10 (0.15)	0.14 (0.11)	-0.09 (0.13)	0.06 (0.10)	-0.04 (0.12)
Overplacement: Decisions	0.33*** (0.11)	0.20** (0.08)	0.17** (0.08)	-0.02 (0.11)	0.17** (0.07)	0.21*** (0.08)	0.05 (0.07)	0.13* (0.08)
Overplacement: Morality	-0.08 (0.11)	0.09 (0.08)	0.07 (0.08)	-0.06 (0.10)	0.09 (0.07)	0.01 (0.08)	0.06 (0.06)	-0.10 (0.08)
Observations	7,011	7,011	7,011	7,015	7,015	7,015	7,012	7,012
Controls	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Country FE	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes

Source: authors' own calculations. Notes: Each column shows the regression coefficients and the robust standard errors in parentheses corresponding to a multinomial logistic model using the standardized overestimation index and binary indicators for each component of overplacement, which take the value 1 when the respondent express being above the average citizen in that dimension. The base category of the dependent variables is "never offering resistance". *** $p < 0.01$, ** $p < 0.05$, * $p < 0.1$. Controls include: age, gender, marital status, education level, employment, trust (justice system, parliament, police and president) and life satisfaction. Survey questions used for the construction of the dependent and independent variables are available in Appendix A.1.

A.3.8 Including overplacement in responsibility when using weapons

Table A.21: Overconfidence and Gun Ownership Preferences, Including Overplacement in Responsibility when using Weapons

Variable	Police [1]	Security guards [2]	Citizens Home [3]	Citizens Street [4]
Overestimation Index	0.03*** (0.01)	0.03*** (0.01)	0.04*** (0.01)	0.06*** (0.01)
Overplacement: Responsibility	0.05 (0.04)	0.06 (0.04)	-0.01 (0.04)	0.01 (0.04)
Overplacement: Decisions	0.03 (0.03)	0.08*** (0.03)	0.09*** (0.02)	0.10*** (0.02)
Overplacement: Morality	0.02 (0.02)	0.06** (0.03)	-0.03 (0.02)	-0.00 (0.02)
Overplacement: Weapons	0.06** (0.03)	0.07*** (0.03)	0.16*** (0.02)	0.05** (0.02)
Observations	7,003	7,003	7,003	7,003
R-squared	0.115	0.090	0.178	0.153
Controls	Yes	Yes	Yes	Yes
Country FE	Yes	Yes	Yes	Yes

Source: authors' own calculations. Notes: Each column shows the regression coefficients and the robust standard errors in parentheses corresponding to OLS estimations of linear models using standardized dependent variables, a standardized overestimation index, and binary indicators for each component of overplacement, which take the value 1 when the respondent express being above the average citizen in that dimension. *** $p < 0.01$, ** $p < 0.05$, * $p < 0.1$. Controls include: age, gender, marital status, education level, employment, trust (justice system, parliament, police and president) and life satisfaction. Survey questions used for the construction of the dependent and independent variables are available in Appendix A.1.

Table A.22: Overconfidence and Willingness to Offer Resistance in a Robbery, Including Overplacement in Responsibility when using Weapons

Variable	In the street			At home: Alone			At home: With family	
	Knife [1]	Firearm [2]	Always [3]	Knife [4]	Firearm [5]	Always [6]	Equal weapon [7]	Always [8]
Overestimation Index	-0.01 (0.05)	-0.03 (0.04)	0.07* (0.04)	0.03 (0.05)	0.02 (0.03)	0.07* (0.04)	0.05* (0.03)	0.08** (0.04)
Overplacement: Responsibility	-0.14 (0.15)	0.10 (0.13)	-0.09 (0.13)	-0.10 (0.15)	0.10 (0.11)	-0.09 (0.13)	0.03 (0.10)	-0.05 (0.13)
Overplacement: Decisions	0.31*** (0.11)	0.15* (0.08)	0.16** (0.08)	-0.03 (0.11)	0.12* (0.07)	0.19** (0.08)	0.02 (0.07)	0.12 (0.08)
Overplacement: Morality	-0.10 (0.11)	0.02 (0.08)	0.06 (0.08)	-0.07 (0.10)	-0.00 (0.07)	-0.03 (0.08)	0.00 (0.06)	-0.12 (0.08)
Overplacement: Weapons	0.13 (0.11)	0.43*** (0.08)	0.01 (0.08)	0.06 (0.10)	0.51*** (0.07)	0.17** (0.08)	0.30*** (0.06)	0.08 (0.08)
Observations	6,998	6,998	6,998	7,002	7,002	7,002	6,997	6,997
Controls	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Country FE	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes

Source: authors' own calculations. Notes: Each column shows the regression coefficients and the robust standard errors in parentheses corresponding to a multinomial logistic model using the standardized overestimation index and binary indicators for each component of overplacement, which take the value 1 when the respondent express being above the average citizen in that dimension. The base category of the dependent variables is "never offering resistance". *** $p < 0.01$, ** $p < 0.05$, * $p < 0.1$. Controls include: age, gender, marital status, education level, employment, trust (justice system, parliament, police and president) and life satisfaction. Survey questions used for the construction of the dependent and independent variables are available in [Appendix A.1](#).

A.3.9 Interaction of overplacement with performance in math question

Table A.23: Overconfidence and Gun Ownership Preferences, Heterogeneity by Performance in Math Questions

Variable	Police [1]	Security guards [2]	Citizens Home [3]	Citizens Street [4]
Overestimation Index	0.03** (0.01)	0.03*** (0.01)	0.04*** (0.01)	0.06*** (0.01)
Overplacement (PCA) \times Fails in math questions	0.05** (0.02)	0.09*** (0.02)	0.07*** (0.02)	0.05** (0.02)
Overplacement (PCA) \times Succeeds in math questions	0.03* (0.01)	0.06*** (0.02)	0.02 (0.01)	0.04*** (0.01)
Observations	7,015	7,015	7,015	7,015
R-squared	0.115	0.089	0.172	0.152
Controls	Yes	Yes	Yes	Yes
Country FE	Yes	Yes	Yes	Yes

Source: authors' own calculations. Notes: Each column shows the regression coefficients and the robust standard errors in parentheses corresponding to OLS estimations of linear models using both standardized dependent and independent variables. A respondent succeeds in the math questions if he or she correctly answers to both a simple sum and counting triangles questions. As the overplacement index is not included individually in the specification, the interaction coefficients can be interpreted as the individual effect of this variable conditional on having correctly answered to the math questions or not. *** $p < 0.01$, ** $p < 0.05$, * $p < 0.1$. Controls include: age, gender, marital status, education level, employment, trust (justice system, parliament, police and president) and life satisfaction. Survey questions used for the construction of the dependent and independent variables are available in Appendix A.1.

Table A.24: Overconfidence and Willingness to Offer Resistance in a Robbery, Heterogeneity by Performance in Math Questions

Variable	In the street			At home: Alone			At home: With family	
	Knife [1]	Firearm [2]	Always [3]	Knife [4]	Firearm [5]	Always [6]	Eq. weapon [7]	Always [8]
Overestimation Index	-0.01 (0.05)	-0.03 (0.04)	0.07* (0.04)	0.03 (0.05)	0.02 (0.03)	0.07* (0.04)	0.05* (0.03)	0.08** (0.04)
Overplacement (PCA) × Fails in math q.	0.14* (0.08)	0.17*** (0.06)	0.02 (0.07)	-0.01 (0.07)	0.14*** (0.05)	0.07 (0.07)	0.14*** (0.05)	0.07 (0.07)
Overplacement (PCA) × Succeeds in math q.	0.02 (0.06)	0.10** (0.05)	0.08* (0.05)	-0.02 (0.06)	0.11*** (0.04)	0.06 (0.05)	0.01 (0.04)	-0.04 (0.05)
Observations	7,007	7,007	7,007	7,011	7,011	7,011	7,008	7,008
Controls	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Country FE	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes

Source: authors' own calculations. Notes: Each column shows the regression coefficients and the robust standard errors in parentheses corresponding to a multinomial logistic model using standardized independent variables. A respondent succeeds in the math questions if he or she correctly answers to both a simple sum and counting triangles questions. As the overplacement index is not included individually in the specification, the interaction coefficients can be interpreted as the individual effect of this variable conditional on having correctly answered to the math questions or not. *** $p < 0.01$, ** $p < 0.05$, * $p < 0.1$. Controls include: age, gender, marital status, education level, employment, trust (justice system, parliament, police and president) and life satisfaction. Survey questions used for the construction of the dependent and independent variables are available in Appendix A.1.

A.3.10 Alternative index for overestimation (question by question)

Table A.25: Overconfidence and Gun Ownership Preferences, Alternative Overestimation Index

Variable	Police [1]	Security guards [2]	Citizens Home [3]	Citizens Street [4]
Overestimation Alternative Index	0.01 (0.01)	0.03** (0.01)	0.03** (0.01)	0.05*** (0.01)
Overplacement (PCA)	0.04*** (0.01)	0.07*** (0.01)	0.04*** (0.01)	0.05*** (0.01)
Observations	7,019	7,019	7,019	7,019
R-squared	0.114	0.089	0.171	0.151
Controls	Yes	Yes	Yes	Yes
Country FE	Yes	Yes	Yes	Yes

Source: authors' own calculations. Notes: Each column shows the regression coefficients and the robust standard errors in parentheses corresponding to OLS estimations of linear models using standardized dependent and independent variables. The overestimation alternative index is defined using the question-by-question method for estimation of right answers instead of the final question on the number of expected correct answers. *** $p < 0.01$, ** $p < 0.05$, * $p < 0.1$. Controls include: age, gender, marital status, education level, employment, trust (justice system, parliament, police and president) and life satisfaction. Survey questions used for the construction of the dependent and independent variables are available in Appendix A.1.

Table A.26: Overconfidence and Willingness to Offer Resistance in a Robbery, Overestimation Alternative Index

Variable	In the street			At home: Alone			At home: With family	
	Knife [1]	Firearm [2]	Always [3]	Knife [4]	Firearm [5]	Always [6]	Equal weapon [7]	Always [8]
Overestimation Alternative Index	-0.00 (0.05)	-0.07* (0.04)	0.06 (0.04)	0.04 (0.05)	0.03 (0.03)	0.05 (0.04)	0.06** (0.03)	0.08** (0.04)
Overplacement (PCA)	0.06 (0.05)	0.13*** (0.04)	0.06 (0.04)	-0.02 (0.05)	0.12*** (0.03)	0.07* (0.04)	0.06** (0.03)	0.00 (0.04)
Observations	7,011	7,011	7,011	7,015	7,015	7,015	7,012	7,012
Controls	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Country FE	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes

Source: authors' own calculations. Notes: Each column shows the regression coefficients and the robust standard errors in parentheses corresponding to a multinomial logistic model using standardized independent variables. The base category of the dependent variables is "never offering resistance". The overestimation alternative index is defined using the question-by-question method for estimation of right answers instead of the final question on the number of expected correct answers. *** $p < 0.01$, ** $p < 0.05$, * $p < 0.1$. Controls include: age, gender, marital status, education level, employment, trust (justice system, parliament, police and president) and life satisfaction. Survey questions used for the construction of the dependent and independent variables are available in Appendix A.1.

A.3.11 Binary overestimation index

Table A.27: Overconfidence and Gun Ownership Preferences, Binary Overestimation Index

Variable	Police	Security guards	Citizens Home	Citizens Street
	[1]	[2]	[3]	[4]
Binary Overestimation Index	0.06** (0.02)	0.04* (0.02)	0.05** (0.02)	0.09*** (0.02)
Overplacement (PCA)	0.04*** (0.01)	0.07*** (0.01)	0.04*** (0.01)	0.05*** (0.01)
Observations	7,019	7,019	7,019	7,019
R-squared	0.114	0.088	0.171	0.151
Controls	Yes	Yes	Yes	Yes
Country FE	Yes	Yes	Yes	Yes

Source: authors' own calculations. Notes: Each column shows the regression coefficients and the robust standard errors in parentheses corresponding to OLS estimations of linear models using standardized dependent and independent variables. The binary overestimation index is defined as 1 when the expected number of right answers reported in the questionnaire is greater than the effective number of correct answers and 0 otherwise. *** $p < 0.01$, ** $p < 0.05$, * $p < 0.1$. Controls include: age, gender, marital status, education level, employment, trust (justice system, parliament, police and president) and life satisfaction. Survey questions used for the construction of the dependent and independent variables are available in Appendix A.1.

Table A.28: Overconfidence and Willingness to Offer Resistance in a Robbery, Binary Overestimation Index

Variable	In the street			At home: Alone			At home: With family	
	Knife [1]	Firearm [2]	Always [3]	Knife [4]	Firearm [5]	Always [6]	Equal weapon [7]	Always [8]
Binary Overestimation Index	0.05 (0.10)	-0.01 (0.07)	0.18** (0.07)	0.10 (0.10)	-0.01 (0.06)	0.14* (0.08)	0.06 (0.06)	0.14* (0.07)
Overplacement (PCA)	0.06 (0.05)	0.13*** (0.04)	0.06 (0.04)	-0.02 (0.05)	0.12*** (0.03)	0.07* (0.04)	0.06** (0.03)	0.00 (0.04)
Observations	7,011	7,011	7,011	7,015	7,015	7,015	7,012	7,012
Controls	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Country FE	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes

Source: authors' own calculations. Notes: Each column shows the regression coefficients and the robust standard errors in parentheses corresponding to a multinomial logistic model using standardized independent variables. The base category of the dependent variables is "never offering resistance". The binary overestimation index is defined as 1 when the expected number of right answers reported in the questionnaire is greater than the effective number of correct answers and 0 otherwise. *** p<0.01, ** p<0.05, * p<0.1. Controls include: age, gender, marital status, education level, employment, trust (justice system, parliament, police and president) and life satisfaction. Survey questions used for the construction of the dependent and independent variables are available in Appendix A.1.

A.3.12 Effect of estimated performance by actual performance

Table A.29: Overconfidence and Gun Ownership Preferences, Heterogeneity by Number of Right Answers

Variable	Police [1]	Security guards [2]	Citizens Home [3]	Citizens Street [4]
Panel A: Estimated number of right answers in end question				
Estimated number × Four right answers	0.05** (0.02)	0.02 (0.02)	0.03* (0.02)	0.00 (0.02)
Estimated number × Five right answers	0.02 (0.02)	0.00 (0.02)	0.03** (0.02)	0.02 (0.02)
Estimated number × Six right answers	0.01 (0.02)	-0.02 (0.02)	-0.00 (0.02)	0.03* (0.02)
Estimated number × Seven right answers	0.05*** (0.02)	0.02 (0.02)	0.03* (0.02)	0.01 (0.02)
Estimated number × Eight right answers	0.03 (0.02)	0.00 (0.02)	0.03 (0.02)	0.01 (0.02)
Overplacement (PCA)	0.03** (0.01)	0.08*** (0.01)	0.04*** (0.01)	0.05*** (0.01)
Observations	5,848	5,848	5,848	5,849
R-squared	0.125	0.098	0.185	0.157
Panel B: Estimated number of right answers question by question				
Estimated number × Four right answers	0.02 (0.01)	0.01 (0.01)	0.02 (0.01)	0.01 (0.01)
Estimated number × Five right answers	0.01 (0.01)	0.00 (0.01)	0.02 (0.01)	0.01 (0.01)
Estimated number × Six right answers	0.02 (0.02)	0.01 (0.01)	0.01 (0.01)	0.02* (0.01)
Estimated number × Seven right answers	0.05*** (0.02)	0.03 (0.02)	0.03** (0.02)	0.03** (0.01)
Estimated number × Eight right answers	0.01 (0.02)	-0.01 (0.02)	0.02 (0.02)	0.01 (0.02)
Overplacement (PCA)	0.03** (0.01)	0.08*** (0.01)	0.04*** (0.01)	0.05*** (0.01)
Observations	5,848	5,848	5,848	5,849
R-squared	0.125	0.098	0.185	0.158
Controls	Yes	Yes	Yes	Yes
Country FE	Yes	Yes	Yes	Yes

Source: authors' own calculations. Notes: Each column shows the regression coefficients and the robust standard errors in parentheses corresponding to OLS estimations of linear models using both standardized dependent and independent variables. The estimated number of right answers is the answer to the explicit estimation question in panel A, and the number of individually estimated right answers (as somewhat or very confident) in panel B. The sample is restricted to the number of effective answers that individually gather at least 10% of the respondents for sample size purposes. As the estimated number of right answers is not included individually in the specification, the interaction coefficients can be interpreted as the individual effect of this variable conditional on the specific number of effective right answers. *** p<0.01, ** p<0.05, * p<0.1. Controls include: age, gender, marital status, education level, employment, trust (justice system, parliament, police and president) and life satisfaction. Survey questions used for the construction of the dependent and independent variables are available in Appendix A.1.

Table A.30: Overconfidence and Willingness to Offer Resistance in a Robbery, Heterogeneity by Number of Right Answers

Variable	In the street			At home: Alone			At home: With family	
	Knife [1]	Firearm [2]	Always [3]	Knife [4]	Firearm [5]	Always [6]	Eq. weapon [7]	Always [8]
Panel A: Estimated number of right answers in end question								
Estimated number × Four right answers	0.03 (0.07)	0.02 (0.06)	0.04 (0.06)	0.14** (0.07)	0.06 (0.05)	0.13** (0.06)	0.09* (0.05)	0.14** (0.06)
Estimated number × Five right answers	-0.06 (0.07)	0.01 (0.05)	-0.02 (0.05)	0.07 (0.06)	-0.05 (0.04)	0.00 (0.05)	-0.03 (0.04)	0.01 (0.05)
Estimated number × Six right answers	0.01 (0.07)	-0.03 (0.05)	0.06 (0.05)	0.04 (0.06)	0.07 (0.04)	0.10* (0.05)	0.04 (0.04)	0.09 (0.05)
Estimated number × Seven right answers	0.00 (0.07)	0.01 (0.05)	0.03 (0.05)	-0.05 (0.07)	0.10** (0.05)	0.05 (0.06)	0.10** (0.04)	0.04 (0.05)
Estimated number × Eight right answers	0.22** (0.10)	0.07 (0.07)	-0.10 (0.08)	0.06 (0.10)	0.09 (0.06)	-0.00 (0.08)	0.13** (0.06)	0.04 (0.07)
Overplacement (PCA)	0.07 (0.06)	0.15*** (0.04)	0.11** (0.04)	-0.05 (0.05)	0.13*** (0.04)	0.10** (0.05)	0.06 (0.03)	0.03 (0.04)
Observations	5,843	5,843	5,843	5,845	5,845	5,845	5,843	5,843
Panel B: Estimated number of right answers question by question								
Estimated number × Four right answers	0.00 (0.06)	-0.02 (0.04)	0.05 (0.04)	0.10* (0.05)	0.07* (0.04)	0.09** (0.04)	0.09*** (0.03)	0.09** (0.04)
Estimated number × Five right answers	-0.00 (0.06)	-0.01 (0.04)	0.00 (0.04)	0.06 (0.06)	-0.01 (0.03)	0.01 (0.04)	-0.01 (0.03)	0.02 (0.04)
Estimated number × Six right answers	0.03 (0.06)	-0.04 (0.05)	-0.01 (0.04)	0.01 (0.06)	0.07* (0.04)	-0.03 (0.04)	0.04 (0.03)	0.07 (0.05)
Estimated number × Seven right answers	0.05 (0.07)	0.00 (0.05)	0.03 (0.05)	-0.05 (0.07)	0.11** (0.04)	-0.03 (0.05)	0.08** (0.04)	-0.00 (0.05)
Estimated number × Eight right answers	0.09 (0.11)	0.01 (0.08)	-0.10 (0.07)	0.03 (0.11)	0.06 (0.07)	0.04 (0.08)	0.08 (0.07)	0.00 (0.08)
Overplacement (PCA)	0.07 (0.06)	0.15*** (0.04)	0.11** (0.04)	-0.04 (0.05)	0.13*** (0.04)	0.11** (0.05)	0.06 (0.03)	0.03 (0.04)
Observations	5,843	5,843	5,843	5,845	5,845	5,845	5,843	5,843
Controls	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Country FE	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes

Source: authors' own calculations. Notes: Each column shows the regression coefficients and the robust standard errors in parentheses corresponding to a multinomial logistic model using standardized independent variables. The base category of the dependent variables is “never offering resistance”. The estimated number of right answers is the answer to the explicit estimation question in panel A, and the number of individually estimated right answers (as somewhat or very confident) in panel B. The sample is restricted to the number of effective answers that individually gather at least 10% of the respondents for sample size purposes. As the estimated number of right answers is not included individually in the specification, the interaction coefficients can be interpreted as the individual effect of this variable conditional on the specific number of effective right answers. *** $p < 0.01$, ** $p < 0.05$, * $p < 0.1$. Controls include: age, gender, marital status, education level, employment, trust (justice system, parliament, police and president) and life satisfaction. Survey questions used for the construction of the dependent and independent variables are available in Appendix A.1.

A.4 Principal Component Analysis of Overplacement Index

We retained only component 1 based on the Kaiser's rule, which recommends accepting factors with eigenvalues greater than 1. Also, component 1 has the highest correlation with each variable and is positive compared with the rest of the components, notably component 2.

Because component loadings reflect the correlation between the component and the variable, having the same sign and correlation strength (all greater than 0.5) led us to choose this component. The KMO measures of sampling adequacy are all around 0.6, which indicates acceptable adequacy. The unrotated version of the matrix was used as a varimax rotation; promax rotation did not improve component loadings. A Bartlett test of sphericity rejected the null hypothesis with a Chi-square statistical of 1599.27 and p-value considerably lesser than 0.001, indicating correlation and allowing component analysis.

Table A.31: Principal Component Analysis: Overplacement

Overplacement	Component 1	Component 2	Component 3	Unexplained	KMO
Responsibility	0.507	0.862	0.002	0.000	0.669
Decisions	0.610	-0.357	-0.708	0.000	0.581
Morality	0.609	-0.360	0.706	0.000	0.581
Eigenvalues	1.552	0.809	0.639	0.000	-
Overall	-	-	-	-	0.599