Fear of crime examined through diversity of crime, social inequalities, and social capital: An empirical evaluation in Peru

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Abstract
Latin America is a violent region where fear of crime is well spread but still not understood. Using multilevel methods for a large and subnational representative household survey (N = 271,022), we assess the determinants of fear of crime in Peru, the country with the highest fear of crime and crime victimization in the region. Our results show that body-aimed victimization (physical or sexual abuse from a member of their household, and sexual offenses) is the strongest driver of fear of crime, even higher than armed victimization. Moreover, safety measures based on social capital are negatively related to fear of crime, suggesting that they are palliatives rather than real protections. Finally, our study shows that people in a higher socioeconomic status are more likely to fear more because they have more (resources) to lose. Policy implications address Latin America as a whole and punitive policies against crime are common in the region, while evidence-based decisions are scarce.

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Introduction

Insecurity in Latin America has reached critical proportions. The homicide rate per 100 inhabitants in this region triples the world average and is five times larger than in European countries (UNODC, 2018). Robbery rates are also much higher in Latin American countries when compared to developed ones; only Southern African countries are in a worse position (Heiskanen, 2010) than Latin American ones. Especially since the 1990s, these forms of crime among others have become regular issues in Latin American everyday life, as has happened with their consequences in the public agenda and citizen concerns (Dammert, 2019).

Fear of crime (FOC), once considered mainly as a product of criminality, is now conceived as a multidimensional concept that comprises fears specific to crime (Ferraro, 1995) but also fears to social representations of crime and expressions of social inequalities (Hummelsheim et al., 2011; Vieno et al., 2013; Visser et al., 2013) that are linked to individual factors as well as historical and social contexts (Collins, 2016). Furthermore, FOC impacts on economic, social, and political issues, including an accelerated process of privatization of security, abandonment of public spaces, increasing urban segregation, and a general sense of distrust of public institutions (especially those linked to the criminal justice system) (Hummelsheim et al., 2011; M. Lee & Ellis, 2017; Mythen & Lee, 2017).

Considering this, we focus on Peru in order to study the associations that FOC maintains with three social processes: diversity of crime (violent, body-aimed, and indirect), social capital (organic and non-organic safety measures), and socioeconomic status. We applied multilevel mixed-effects linear regression (two levels: individuals and districts) to a subnationally representative household survey (N = 271,022).

The motivation to study the Peruvian case is highlighted in three facts. First, Peru is one of the most extreme cases in the Latin American scenario in terms of FOC and victimization rates (Figure 1). According to the data from the AmericasBarometer,[1] the country maintains this position since 2006. Victimization may be decreasing although it is still very high and has become the main concern among Peruvians (Dammert, Mujica, & Zevallos, 2017). Since 2010 (previous reliable data are not available), the percentage of victims of a crime fell by 14 percentage points (26.4% in 2017). However, there is an important level of street crime affecting citizens; moreover, FOC is extended and persistent in Peru. Nine out of 10 Peruvians claim to be afraid of being victims of crime in the next 12 months (Instituto Nacional de Estadística e Informática, 2018) and between 2010 and 2017, this rate rose from 85 to 90% at national level.

Second, the gap between high FOC and victimization is relevant. Nineteen out of 100 people have been victims of theft (money, wallet, or cell phone) in the last 12 months, the most common crime in Peru; nonetheless, 77 think they will be victims of this type of crime during the next year (Instituto Nacional de Estadística e Informática, 2018). Third, public policies have had a strong budget yet weak effects. The Ministry of Interior's budget doubled between 2010 and 2017 (Ministerio de Economía y Finanzas, 2018). Nevertheless, the lack of clear and sustained public policies over time, as well as high levels of impunity fed the citizens' FOC and sense of impunity. Police officers are seen as corrupt, slow, inefficient, and even violent by most Peruvians (Dammert, 2016). According to data from the AmericasBarometer, one out of five
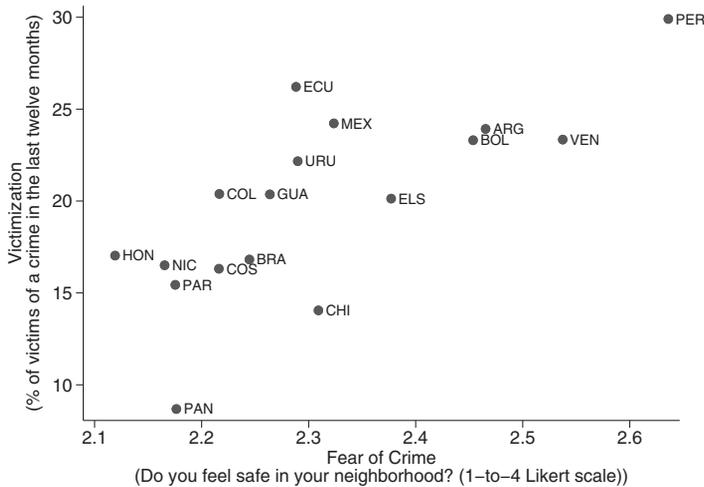
Figure 1. Victimization and FOC in Latin America (average: 2004–2014). Source: The AmericasBarometer.

Peruvians was asked for a bribe by a police officer between 2006 and 2016, a proportion that is higher than the Latin American average. According to the same source, in Peru, trust in police has not increased significantly in the period between 2006 and 2016, and has always been lower than the Latin American average.

Although this study focuses on Peru, the three social processes aforementioned (diversity of crime, strong social inequalities, and feeble social capital) are present in other Latin American countries, including those with low levels of violence such as Ecuador, Bolivia, Costa Rica, and Uruguay (Dammert & Salazar, 2017). The results are relevant to extend classic theories of FOC and contribute to the consolidation of a theoretical framework that strengthens Southern Criminology, a needed yet still pending endeavor (Carrington et al., 2016).

The rest of this work is organized as follows: First, we present the literature review, highlighting its relationship with the diversity of crime, social inequalities, and social capital. Then, we present the methods and results. Finally, we discuss results extending the scope to the Latin American region.

Literature review

The theoretical frameworks developed to explain FOC present two main features. On the one hand, they have been mostly disconnected from empirical results (Hale, 1996; Henson & Reyns, 2015; Narváez, 2015). As a consequence, findings have been descriptive rather than analytical (Farrall et al., 2007). On the other hand, most academic production has come from the global north, where both FOC and crime are low. Despite its social and political importance, literature on FOC is still limited in Latin America. Research has incorporated social, cultural, and historical approaches into the analysis of FOC (Kessler, 2009; Reguillo, 2003). However, it usually presents methodological limitations, and most importantly, it has not been able to connect FOC with the

three social processes that characterize social life in southern societies: diversity of crime (multiple violence and increasing presence of lethal crime), strong social inequalities, and feeble social capital (Dammert, 2019).

Although there are different theoretical approaches that analyze the appearance and development of FOC, our study focuses on three groups of research questions. First, do all types of crime victimization (violent, body-aimed, and indirect) affect FOC equally? Although there is plenty of evidence that victims of crime tend to have higher levels of FOC (Farrall et al., 2007; Wilcox & Land, 1996), there are only a few (Chataway & Hart, 2017). More specifically, do violent victimization (committed with arms), body-aimed victimization (physical or sexual abuse from a member of their household, and sexual offenses), and indirect victimization (crimes suffered by others at home) influence FOC in a different way?

Second, the correlation between neighborhood organizational characteristics (social capital) and FOC has been discussed by social disorganization theorists (Sampson & Groves, 1989). Although there is literature on safety measures and FOC on some European and North American countries (Collins, 2016; Mythen & Lee, 2017), we attempt to fill the gap in the Latin American context and build a social capital perspective based on differentiating the relationship between FOC and organic and non-organic safety measures. Is adopting safety measures associated with a decrease in FOC? Are these effects different when safety measures are differentiated by the social capital that drives them (organic and non-organic safety measures)?

Third, the literature suggests that most fearful people are generally those of lower socioeconomic levels (Brunton-Smith & Sturgis, 2011; Skogan, 1987; Weinrath & Gartrell, 1996), a hypothesis that has not been tested in the case of Peru. For this reason, the question regarding the socioeconomic level takes on special interest. A brief review of this literature is presented as follows.

Diversity of crime

Diversity of crime in Latin America inevitably leads to the mainstream theories of FOC; even so, it also presses to incorporate new perspectives. When examining FOC predictors, some studies have assumed it as an "umbrella concept," omitting that different types of victimization may have different effects (size) on FOC (Schafer et al., 2006; Takagi et al., 2012). A useful way to take the diversity in crime into account is to distinguish at least three types of victimization: violent crimes (theft or robbery committed with arms, such as car, motorcycle, or personal belongings theft), victimization toward the body (physical or sexual abuse of a member of their household, and sexual offenses), and indirect victimization (crimes suffered by others at home). This classification, led by our data choice, allows us to break one of the most important FOC drivers (victimization), based on the level of violence used (with or without arms), the objective (objects or body), and who suffers it (surveys' respondents or others in the family).

The relationship between victimization and FOC has been a key element of research (Pryce, Wilson, et al., 2018). Although most studies show an important correlation between the two (DuBow et al., 1979; Kennedy & Silverman, 1985; Quann & Hung, 2002; Russo et al., 2013; Skogan, 1987; Sookram et al., 2011;

Tseloni & Zarafonitou, 2008), there is mixed evidence in others (Quann & Hung, 2002; Triana, 2017). Pryce, Fuller, et al. (2020) found an inverse relationship between both concepts. It can be argued that those who have been victims perceive higher chances of revictimization than those who have not directly faced a criminal act (Rühs et al., 2017). At the comparative perspective Singer, Cecilia, et al. (2019) show that while the direct effects of victimization are mixed across countries, FOC consistently mediates the effects of victimization on trust in criminal justice institutions.

Indirect or vicarious victimization, which refers to victimization suffered by others at home, has a clear impact on fear (Russo et al., 2013; Wilcox & Land, 1996). For instance, Haynes and Rader (2015) found that while women are more afraid of what might happen to them, men are more afraid of what could happen to their female partners. Moreover, Heber (2009) stated that "altruistic fear" (also known as vicarious fear) explains FOC in those who based their perception of insecurity on the reality of others. For instance, mothers' perceptions about their own safety are closely linked to the perception of their children's risk. Chataway and Hart (2017) used path analysis and found that FOC is more present when respondents are asked to reflect on crimes committed against persons, but this pattern is the opposite when they consider property crimes.

Undoubtedly, the impact that violent, body-aimed, and vicarious victimization has on people needs to be studied taking into account the type of crime involved. Although there are different ways of evaluating victimization, only a few have evaluated and ranked in the same work the effect of the different forms of victimization on FOC (Vilalta, 2010). This leaves a gap on how different forms of victimization impact on FOC in contexts of high crime rates, such as in Latin America. Specifically, we sustain as a hypothesis that the effects of the different types of victimization on FOC are stepped. We state that the effect of victimization on FOC is related to the perceived degree of violence used in the event. While we expect vicarious victimization to have a weaker effect on FOC than body-aimed and violent victimization, previous literature offers little clue for anticipating the effect of body-aimed and violent victimization on FOC. We suspect that the first one will have a higher impact as it relates to a wider range of possibilities of danger.

Social inequalities

Social and economic inequalities and FOC are positively linked. In individual-level (Franklin et al., 2008; Roman & Chalfin, 2008) and macro-level analysis (Lorenc et al., 2014; Singer, Chouhy, et al., 2019), research shows that FOC is fueled by social and economic traits and inequalities. However, results are mixed concerning the direction of the relationship between FOC, income, and economic deprivation measures (Kurlichová, 2018; Kujala et al., 2018).

Nevertheless, micro- and macro-level studies on FOC also have several results in common. One of those is that different measures of social inequalities are related to the expression of FOC. Among social inequality factors affecting FOC, the socioeconomic status has a particular relevance, as it has been the most common proxy for social inequalities. Using socioeconomic status as proxy for social capital has enabled to propose a wider question: to what extent is FOC a distinctive trait of socioeconomic gap or is it that social inequalities are connected with FOC due to wider social factors (country development, social protection systems, etc.)?

Micro-level research offers a first response to this question, however inconclusive. While most studies find that people with higher socioeconomic status fear more in comparison with lower socioeconomic status people (Ambrey et al., 2014; Pearson & Breetzke, 2014; Wilcox & Land, 1996), in some countries an opposite relationship has been found (Sookram et al., 2011). Still, income may play a role in generating FOC even in specific demographic groups, because it is also related to wider individual vulnerabilities, such as age and residence (Blöbaum & Hunecke, 2005; Karakus et al., 2010; Killias & Clerici, 2000).

From a different perspective, macro-level studies, usually relying on an economic inequality measure (e.g. Gini index), have found that income inequalities are associated with higher odds of perceiving FOC (Vieno et al., 2013; Visser et al., 2013). This type of findings has questioned the assumption that FOC is exclusively a crime-related phenomenon. Rather, FOC is connected to daily social processes present in unequal societies and expressed through different forms of anxieties and fears, a finding that has been consistent in other macro-level studies across different regions like Europe (Hummelsheim et al., 2011) and Latin America (Dammert & Malone, 2013). In the multi-country study of Chon and Wilson (2014), in which some Latin American countries such as Peru were included, socioeconomic status at the individual level was significantly and negatively associated with FOC, but income inequality and poverty at the national level was not. Other studies have found that income has a positive and significant relationship with different fears of crime (H. Lee et al., 2020).

We expect as a hypothesis that socioeconomic status, as a proxy of social inequalities, would significantly predict FOC in Peru. As wealthier groups have more to protect and more (resources) to lose, we expect higher socioeconomic groups to have a higher likelihood of FOC.

Social capital

Social capital may have an important role in determining FOC (Sargeant et al., 2017). Due to the ineffectiveness of policies against crime in Latin America, insecurity has transferred a burden of responsibility from the State to the citizens to protect themselves against crime. To consider this transfer, we differentiate between what we name as organic and non-organic safety measures, implemented at the neighborhood level. Both safety measures differ in terms of the coordination needed for their implementation and the characteristics that make them organic. Hence, they may differ in terms of the amount of social capital that supports them. On the one hand, we consider as organic measures those that require higher coordination among people in order to be implemented and sustained over time. In Peru, this is the case of neighborhood boards and community alarms (neighbors using whistles to warn about crimes being committed in the neighborhood). Both measures fall in this category since they are based on the same collective effort as community boards implement community alarms. On the other hand, non-organic safety measures are also based on collective efforts; however, they require less coordination among neighbors after their implementation. Common examples of this type of measures are private closed-circuit television, the presence of private security guards (informal personnel without specialized training, low education and precarious salary, and social protection benefits), or the installation of fences or

barricades to block streets. Hence, organic safety measures demand more social capital than the non-organic measures.

The social capital approach emphasizes the conditions embedded in people (individually or collectively) for social control (Yuan & McNeeley, 2018). Hence, social disorganization is directly linked to social capital and the degree in which institutions are present. The study of Nichols (2016), conducted in the United States of America, confirmed that although some variables of individual type significantly predict FOC (specially, fear of robbery), variables linked to social disorganization were those that significantly increased the explanatory power of the estimated models.

Other studies link FOC with social capital weakness. Higher levels of fear among the population are associated with those places where the social bond has weakened, increasing public distrust and decreasing the possibilities of creating a common project for the future (Sargeant et al., 2017). The building of social bonds can be instrumental, that is oriented toward specific and pragmatic ends, or organic, based on what Olson (1999) called selective incentives (those that seek to preserve a common public good). For example, in the case of Mexico, Jasso (2013) concludes that perception of insecurity inhibits social cohesion and generates diverse social problems in the population.

Multiple connections of social disorganization with related theories and different ways of defining it push us to formulate several hypotheses in order to capture the complexity of the interactions between this theory and its variables. As far as a stronger social capital is based on organic actions (which involve coordinating and orienting actions toward a shared public good), its effect on reducing FOC will tend to be higher (as it should be the case in organic safety measures).

FOC context in Peru

Peru has a population of 30 million, in which one out of four citizens have been victims of crime in the last 12 months, according to 2016's data from the Peruvian National Survey of Strategic Programs (NSSP), a nationally representative survey with a specialized set of questions on victimization. According to this same source, 90% of victims of violent crime feared crime, as well as 92% of body-aimed victims (physical or sexual abuse from a member of their household and sexual offenses) and 81% of indirect victims. Even with the NSSP, it is known that out of every 100 people of low socioeconomic status, 24 were victims of crime in the previous year and 74 believed that they would be victims in the next 12 months. In the same year, while 28 people that belong to higher socioeconomic levels were victims of a crime, 84 believed that they would also be directly affected by crime in the next 12 months. Safety measures, as a proxy of social capital, show that organic and non-organic measures are differently related to FOC at a descriptive level. This relationship shows three important facts (Figure 2), according to the NSSP data. First, FOC is higher in people who take more safety measures, regardless of whether these are organic or not. Second, people living in neighborhoods with more organic safety measures tend to register more victimization and higher FOC (Figure 2(a)). Third, people who live in neighborhoods with more non-organic safety measures register less victimization but more FOC (Figure 2(b)). Of course, this information has to be taken with caution, as the direction of those relationships is not clear. What is clear is that in Peru crime rates are high as well as FOC. Hence, studying FOC
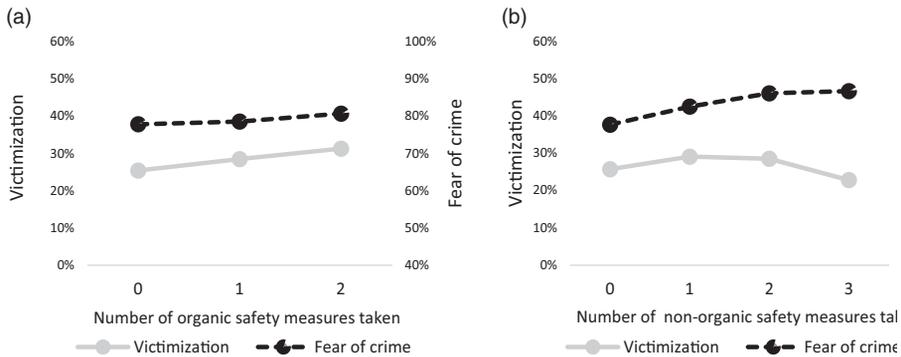
Figure 2. Victimization and FOC with safety measures taken at the neighborhood level. (a) Organic safety measures taken and (b) non-organic safety measures taken. Source: Data from the NSSP (years 2010–2016).

would help to understand the extent of victimization, social inequalities, and social capital behind this widespread phenomenon.

Methodology

Data

Data are drawn from a subnational representative household survey of adults in Peruvian urban areas (NSSP) that was conducted from 2010 to 2016 by the National state office for census and surveys (INEI). This survey has a two-stage probabilistic sample stratified independently by region (90% confidence level) and is carried out every year in urban areas that represent around 70% of the national population in Peru.

Although more recent victimization data exist, our empirical strategy involves working with specific district-level variables that are not available after 2016. The 271,022 respondents that participated in the seven rounds of NSSP were asked about victimization, FOC, and safety measures implemented at the neighborhood level among other issues related to public security matters.

Variables

FOC is our dependent variable and was constructed based on the question "In the next 12 months, do you believe you can be a victim of [criminal action]?" (Yes/No). The NSSP specifically includes nine types of crimes: car theft; auto parts theft; motorcycle robbery; bicycle robbery; money, wallet, or cell phone theft; threats; abuse from a family member; sexual offenses; and extortion. We took an additive approach by aggregating individual scores that range between 0 and 9. Those who feared becoming a victim of eight or more crime types represent 5.7% of respondents.

The study is based on three main explanatory variables that are built into the analytical model with specific groups of independent variables. Victimization plays an important role in determining FOC levels (Farrall et al., 2007). Our research includes three dichotomous independent variables related to different forms of victimization that

Table 1. Descriptive statistics.

	Obs.	Mean	SD	Min	Max
Fear of crime (varies from 1 to 8)	271,022	3.6	2.210	1	8
Victimization (% of victims)					
Body-aimed victimization	271,022	6.8	25.232	0	100
Violent crime	271,022	25.3	43.497	0	100
Indirect victimization	271,022	57.1	49.490	0	100
Social capital					
No. of organic safety measures implemented	271,022	0.11	0.360	0	2
No. of non-organic safety measures implemented	271,022	0.06	0.250	0	3
Socioeconomic status (%)					
Low tertile	271,022	57.3	49.724	0	100
Middle tertile	271,022	23.4	42.309	0	100
Upper tertile	271,022	19.3	39.483	0	100

occurred in the previous year (questions are presented in Appendix 1). First, a variable of body-aimed victimization that includes threats, abuse from a family member, sexual offenses, and extortion. Second, a variable of gun violence victimization (violent victimization) that includes car theft; theft of auto parts; motorcycle robbery; bicycle robbery; money, wallet, or cell phone theft. Third, vicarious victimization includes those who have not been a direct victim of a crime but had someone in their family that was a victim of any crime. According to the NSSP (Table 1), among these three forms of victimization, vicarious is more common (57.1%), followed by gun violence (25.3%) and body-aimed crimes (6.8%).

As a proxy of social capital, the second explanatory variable, we included the number of safety measures implemented at the neighborhood level. The NSSP includes five safety measures that we recoded into two variables that allow us to distinguish between two forms of social capital: organic and non-organic safety measures. The former includes measures that require more coordination to be implemented and personal involvement to be sustained in the long run, such as the development of neighborhood boards and community alarms (neighbors using whistles to warn on crimes being committed in the neighborhood). The latter includes the presence of security cameras, private guard, and gates to block traffic in the neighborhood and requires less coordination and personal involvement to be implemented or sustained in time. Both variables are additive, each adds up the number of safety measures taken by the survey's respondents (0–2 and 0–3, respectively). Measures taken by responders are higher among the organic (0.11) and lower among the non-organic (0.06) (see Table 1).

Socioeconomic status is the third explanatory variable of our research. We included a single variable of socioeconomic status (tertiles) built on the basis of the different socioeconomic characteristics of each household (household has access to public water network; household has toilet facilities; cooks with a gas stove; wall, floor, roof materials) using principal component analysis, a useful technique to reduce the number of different correlated variables into only one. As shown in Table 1, FOC is more common in the low tertile.

Due to the diverse list of observable and unobservable factors that influence FOC (Hale, 1996; Henson & Reyns, 2015), it is crucial to include individual and district-level controls. In the first group, we included sex, age, marital status, perception of police, and surveillance in the neighborhood (named as *serenazgo*, a non-armed municipal body). At the district level, we used different controls such as urban population and district employment (Instituto Nacional de Estadística e Informática, 2007), number of police stations and operation patrollers (both logged per capita) (Instituto National de Estadística e Informática, 2018a), and municipal cost per capita of solid waste collection, as proxy of social disorder, a variable related to FOC (Wikström and Dolmén, 2001). Finally, as no administrative data on crime exist at district level in Peru, we used as proxy three dichotomous variables that indicate if alcoholism, home, and street robbery are considered as main problems in the district. These variables come from a national survey addressed to every district governor in the country in which they are asked about their needs, problems, and resources (Instituto National de Estadística e Informática, 2018b). Among their problems, they have to answer "yes/no" questions to declare if those issues (alcoholism, home robbery, and street robbery) are considered as main problems in their jurisdiction. No collinearity was observed among independent variables (see Appendix 2).

Results

Table 2 presents all the results. As FOC is determined by individual and environmental factors, estimations were made using multilevel mixed-effects linear regression. This method allows capturing the nested data information, in our case, individuals in neighborhoods. Two levels were used (individual and districts). A baseline model (linear regression) was compared to our multilevel estimation using a log likelihood ratio test. Intraclass correlation is the correlation of two random individuals from the same neighborhood. In our case, district-level variation was low (<0.03). We still opt for multilevel strategy because even if macro-level variables are low, they still substantially capture the link between different levels of analysis (Liska, 1990). The proportion of explained variance (R-square) is reported for each level of the multilevel estimations as each level is potentially explained by variables not included in the models (Snijder & Bosker, 1994). Multilevel modeling offers two main advantages. On the one hand, it allows to adequately capture the relationship between different individuals belonging to the same district (spatial correlation), avoiding undervaluation and incorrect partition of variance (Woltman et al., 2012), as well as the risk of false positives, unbiased and not efficient estimators (Goldstein, 2010), which would lead to estimates closer to parameters at the population level. On the other hand, it allows controlling the variability of FOC given by the different characteristics of the districts in which the individuals live.

Among all predictors, endogeneity (double causality) was detected in the case of organic and non-organic safety measures (Hausman test, $p < 0.05$). A set of instrumental variables was incorporated to account for the unobserved relationship between FOC and the safety measures (trust in police, education level, and population density, number of minor public health units, and licenses to build houses). Later tests (rejection of test of under identification with a 0.17 p-value; Hansen J statistic's p-value < 0.01) confirmed that the estimates showed the real correlation between FOC and safety measures.

Table 2. Predictors of FOC (odds ratio).

	M1	M2	M3	M4	M5
Victimization					
Body-aimed victimization (1 = yes; 0 = no)	2.23***	2.34***	2.36***	2.35***	2.39***
Violent crime (1 = yes; 0 = no)	1.65***	1.78***	1.78***	1.86***	1.82***
Indirect victimization (1 = yes; 0 = no)	1.16***	1.16***	1.16***	1.18***	1.16***
Social capital					
Organic safety measures implemented	1.04***	1.04***	1.04***	1.04***	1.04***
Non-organic safety measures implemented	1.11***	1.11***	1.11***	1.11***	1.11***
Socioeconomic status					
Lower tertile (reference category)	1.00	1.00	1.00	1.00	1.00
Middle tertile	1.23***	1.23***	1.23***	1.23***	1.23***
Upper tertile	1.49***	1.49***	1.49***	1.49***	1.49***
Interactions					
Body-aimed victimization x violent victimization		1.00			
Body-aimed victimization x indirect victimization			0.99		
Violent victimization x indirect victimization				0.94***	
Body-aimed victimization x violent victimization x indirect victimization					0.97
Individual controls	Yes	Yes	Yes	Yes	Yes
District-level controls	Yes	Yes	Yes	Yes	Yes
Constant	4.11**	5.07***	5.07***	5.03***	5.07***
Number of individuals	271,022	271,022	271,022	271,022	271,022
Number of districts	646	646	646	646	646
Intraclass correlation	0.02253	0.02253	0.02253	0.02248	0.02253
Snijders/Bosker R-squared Level 1	0.1046	0.1046	0.1046	0.1047	0.1046
Snijders/Bosker R-squared Level 2	0.6759	0.6759	0.6759	0.6763	0.6759
AIC	1,173,077.0	1,170,854.0	1,170,855.9	1,170,843.6	1,170,855.6

AIC: Akaike information criterion; FOC: fear of crime.

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

In addition, the differences of FOC among the Peruvian regions imply that it is better to assume group means individuals that belong to each region (fixed effect). We also took fixed effect for every year, assuming the possibility of yearly temporal trends in FOC.

All estimations included the individual and environmental controls previously indicated. Model 1 presents the effect of the three forms of victimization (violent, body-aimed, and indirect) on FOC. The three effects are significant and different in size, suggesting a stepped relationship with FOC. The biggest effect is found when the victimization is aimed to the body. This type of victimization is associated with a higher effect as it duplicates the odds of perceiving FOC. The second most important effect is violent victimization (crime committed with arms). In this case, the probability of FOC increases by 65 percentage points (pp). The least strong effect is the one concerning indirect victimization. When someone at home (other than the respondent) is a victim of a crime, FOC increases by 16 pp.

The effects of organic and non-organic safety measures (implemented by respondents) on FOC are also presented in Model 1. Compared to previous literature, which associates collective efforts to lessen FOC, our results offer opposite evidence and question the real utility of private safety measures. Neither of the two forms of social capital reduces FOC. Although the effect of organic measures (neighborhood boards and community alarms) is quite low (4 pp), the effect of non-organic measures (security cameras, private guard, and gates to block traffic) is higher (11 pp). Both effects are significant and suggest that safety measures are more of a palliative than a probable effective measure against crime and FOC. Model 1 also shows that compared to the socioeconomic tertile of lower income, the people of the middle tertile are 23 pp more likely to perceive FOC, while that probability is even higher (53 pp) for those in the higher third of socioeconomic status.

After having evaluated the effects of victimization, social capital, and socioeconomic status separately, Models 2–5 include some interactions. The interactions among the different forms of victimization have a common pattern. In all cases, the effect is very small and not significant. The only significant effect is the interaction between violent victimization and indirect victimization. In this case, the odds of FOC are reduced by 6 pp (Model 4).

Discussion

We focused our study on the predictors of FOC in Peru, a country with the highest FOC levels in Latin America. We used a large sample from a subnational representative household survey for the 2010–2016 period. Three specific predictors were tested: victimization, socioeconomic status, and social capital. Our results, based on multilevel modeling (two levels: individuals and district), support leading FOC theories that have not been fully tested in Latin America let alone in Peru. Three conclusions can be highlighted.

First, instead of taking victimization as an umbrella concept, we included different types of victimization and found that their effects on FOC are stepped. The likelihood of FOC doubles when there is body-aimed victimization (physical or sexual abuse from a member of their household, and sexual offenses); FOC increases less when the victimization is violent (crime committed with weapon); and there is a lesser effect in the case

of vicarious victimization (victimization suffered by others at home). The only significant interaction was between violent victimization and vicarious victimization. However, their effect was lower than taking these variables separately, suggesting that violent experiences may normalize FOC. Previous literature, which did not include these three types of victimization, presents mixed results. Some studies found that violent victimization is not significantly associated with FOC (H. Lee et al., 2020), while others stated that FOC is more likely to appear when individuals are asked to reflect on crimes against persons (Chataway & Hart, 2017). In addition, a recent study found that direct and indirect victimizations affect FOC (Hernández, 2017), while H. Lee et al. (2020) found that both forms of victimization predict dysfunctional worry of crime (fear that motivates precaution without affecting quality of life), but not functional worries (difficulties with stop worrying, mood disturbance, and daily functioning affected). Our results propose the need to differentiate the effect of victimization on FOC, based on a hierarchy—what is threatened (body), with what (attack with arms), and who the victim is (other than respondents in the home or indirect victimization)—and to explore the logic of these stepped effects in the face of alternative conceptualizations of fear (Jackson & Gray, 2010; Lupton, 2000).

Second and contrary to our hypothesis, safety measures implemented at the neighborhood level are associated with increases in FOC. Following a social capital approach, two types of safety measures were distinguished based on the time and coordination efforts needed to implement them. Those measures that require more personal involvement and longer-term coordination with other neighbors are proxies of stronger social capital. We name them organic safety measures, such as neighborhood boards and community alarms. On the contrary, non-organic measures require less of these inputs and include private closed-circuit television, private security guards, and the installation of fences or barricades to block streets. Between the two, the latter presents a stronger association with FOC, which is in line with recent studies on fear, social capital, and related concepts such as trust (Barton et al., 2016) and collective efficacy (H. Lee et al., 2020; M. Lee et al., 2020). Our results show that while people who protect themselves fear more, that fear will be even stronger when those safety measures are the consequence of feeble social capital. This highlights the fact that adopting measures against crime at the neighborhood level may not be effective. On the contrary, those measures may work as palliatives for FOC (preventing it to increase) and not as real deterrents. What drives these findings is less clear, nonetheless it is probably related to the construction of general anxieties about crime and precariousness linked to the social and economic fields (Chadee & Ng Ying, 2013; Dammert & Malone, 2013). These results call for more research to understand why people adopt certain safety measures, their costs, and their actual and anticipated effectiveness. Differentiating the effects of safety measures on FOC by socioeconomic status is crucial. Taking into account that a qualitative study in Peru (Kanashiro, Hernández, & Dammert, 2018) found that people of lower socioeconomic status prefer organic safety measures since daily coordination is part of their tools for socioeconomic survival, while non-organic measures are preferred by those with higher resources, given their abundance of economic capital.

Third, a positive relationship was found between socioeconomic status and FOC. The higher the status, the more likely FOC will be. Although the literature results are mixed (Blöbaum & Hunecke, 2005; Karakus et al., 2010; Killias & Clerici, 2000), our results

fall along the interpretation that scarcity of resources interacts with the precariousness of the environment and its assimilation as a normal environment. Those at the lower end of the socioeconomic spectrum adjust to living conditions marked by economic and social precariousness (McKee & Milner, 2000) and internalize FOC as an additional worry to cope with. This situation differs on how FOC is conceived in higher socioeconomic groups. In this case, people think of themselves as victims (Felson, 2017) who fear more because they have more goods to protect (Chon & Wilson, 2014; Wilcox, 1998).

The results of our study suggest implications for Latin America that could help to design more effective policy initiatives against crime and FOC as autonomous social problems with independent dimensions (Dammert & Salazar, 2017). First and in light of crime diversity, the effects of different victimization types (direct, indirect, and violent) on FOC must be studied and compared across Latin American societies, in order to understand how and why they vary and how they are related to cross-cultural characteristics. For example, the different rates of each victimization type and their different effects on FOC may explain why some countries have high levels of FOC but low levels of crime (Latin American Public Opinion Project [LAPOP], 2017) while others present low rates of homicide and violence but increasing rates of certain crimes.

Second, as social inequalities have an important role in FOC, our study suggests the need to go further into country-level development as an explanation of FOC (Cho et al., 2005) and call attention to individual-level socioeconomic status as it connects to broader social processes to which citizens are daily exposed. It is not necessarily development what drives FOC, but how in more unequal societies pragmatic fears such as loss of income, vehicle accidents, relative/friend with a life threatening illness, or health problems foster general fears and anxieties (Chadee et al., 2016). In support of this idea, a clear relationship that connects FOC to social anxieties (poverty and income inequalities) has been found in Latin America (Dammert & Malone, 2003) and Europe (Hummelsheim et al., 2011).

Third, safety measures that were traditionally considered to be relevant to reduce citizen anxiety—such as more police on the streets—have had little or no effect on it (Lai et al., 2016). FOC appears to be a multidimensional phenomenon marked by important degrees of emotionality and, therefore, traditional tools like increasing police presence or developing digital systems of surveillance to tackle crime are not enough. This is a particularly relevant result for the permanent regional concern that has emphasized policies that may have a limited effect in deterring, preventing, or fighting crime in hopes of eventually impacting FOC.

Our study is not without limitations. As we used cross sectional data, results only indicate statistical associations rather than causality. In addition, though our FOC variable follows most of Ferraro's (1995) suggestion on how to measure this concept, we built an aggregated measure of FOC based on fear of nine different crimes. This allowed us to have a wider understanding of FOC, still at the same time this option does not answer how the predictors of fear to each crime vary, as has been shown by previous works (Chon & Wilson, 2014; Lai et al., 2016; H. Lee et al., 2020). Finally, although FOC is a concept with multiple predictors (Hale, 1996), we were constrained to include only a set of them due to data availability. In addition, recent studies have highlighted the role of personality traits on FOC (Sousa et al., 2018), suggesting that FOC is not

entirely a social construct as we have stated, but also an emotion as it is correlated with characteristic fear emotions. More research is needed in this line of the field.

In spite of the aforementioned limitations, our results suggest that future research may benefit from understanding how social capital relates differently with socioeconomic status and understanding the social capital mechanisms by which fear spreads through these networks, as this would encourage public policy interventions to have a stronger connection with the FOC's theory of change. Finally, research on FOC in the global south brings a new perspective to the analysis of the increasing presence of high levels of social inequalities. In Peru, those in the higher part of the socioeconomic spectrum have a higher probability of FOC, although they are probably benefiting more from police and private security. Perhaps FOC could be depicted as an element of further segregation and socioeconomic fragmentation. Our research cannot answer this hypothesis but makes a strong emphasis on the need of more research in developing countries.

Declaration of conflicting interests

Funding

Note

1. We rely upon the Latin American Public Opinion Project's (LAPOP) AmericasBarometer survey. For more than three decades, LAPOP has been the leading organization collecting public opinion data in Latin America; FOC and public security issues have been central to recent surveys along with questions related to trust in police, and perceptions and experiences with crime.

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Appendix 1. Questions used to measure our three victimization variables

Body-aimed victimization:

Answered "Yes" to at least one of the following questions:

In the last 12 months, were you a victim of threats?
In the last 12 months, were you a victim of abuse from a family member?
In the last 12 months, were you a victim of sexual offenses?
In the last 12 months, were you a victim of extortion?

Gun violence victimization:

Victims were identified as such if respondent answered "Yes" to two conditions:

(1) Answered "Yes" to at least one of the following questions:

In the last 12 months, were you a victim of car theft?
In the last 12 months, were you a victim of theft of auto parts?
In the last 12 months, were you a victim of motorcycle robbery?
In the last 12 months, were you a victim of bicycle robbery?
In the last 12 months, were you a victim of money, wallet or cell phone theft?
(2) Answered "Yes" to the following question for each previous crime:
Did the delinquent have a weapon? (Yes/No)
Vicarious victimization:

The NSSP is a household survey in which every member of the household is included in the survey. For every respondent, vicarious victimization was marked as present (1) if at least one of the other members in their household responded "Yes" to at least one of the following questions:

In the last 12 months, were you a victim of threats?
In the last 12 months, were you a victim of abuse from a family member?
In the last 12 months, were you a victim of sexual offenses?
In the last 12 months, were you a victim of extortion?
In the last 12 months, were you a victim of car theft?
In the last 12 months, were you a victim of theft of auto parts?
In the last 12 months, were you a victim of motorcycle robbery?
In the last 12 months, were you a victim of bicycle robbery?
In the last 12 months, were you a victim of money, wallet or cell phone theft?

Appendix 2. Collinearity diagnosis

	Variance inflated factor (VIF)	Square root of VIF	Tolerance	R-squared
Body-aimed victimization	1.02	1.01	0.98	0.02
Violent crime	1.05	1.03	0.95	0.05
Indirect victimization	1.04	1.02	0.96	0.04
Organic safety measures implemented	1.03	1.02	0.97	0.03
Non-organic safety measures implemented	1.07	1.03	0.94	0.06
Socioeconomic status	1.17	1.08	0.85	0.15
Sex	1.03	1.01	0.97	0.03
Age	1.34	1.16	0.75	0.25
Marital status	1.34	1.16	0.75	0.25
Perception of police in the neighborhood	1.15	1.07	0.87	0.13
Perception of serenazgo (non-armed municipal police) surveillance in the neighborhood	1.15	1.07	0.87	0.13
Number of police stations (logged per capita)	2.46	1.57	0.41	0.59

(continued)

Continued

	Variance inflated factor (VIF)	Square root of VIF	Tolerance	R-squared
Number of operation patrollers (logged per capita)	2.07	1.44	0.48	0.52
The district has problems with alcoholic people	1.12	1.06	0.90	0.10
The district has robbery problems	1.50	1.22	0.67	0.33
The district has street robbery problems	1.10	1.05	0.91	0.09
Municipal cost per capita of solid waste collection	1.06	1.03	0.94	0.06
Year	1.10	1.05	0.91	0.09
Urban population	1.90	1.38	0.53	0.47
Employment	1.66	1.29	0.60	0.40