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Fear of Crime, Victimization, and Changes in Life Routines: A Structural Equation Model

The aim of this paper was to apply self-control/risky lifestyle theory on the risk of cyberstalking victimization in a younger age group by using a representative student sample from Germany. Results show that cyberstalking victimization is experienced by 18.2% of the representative sample of ninth-grade students. Girls were more often victimized than boys. Only a minority experience cyberstalking exclusively, whereas considerably more juveniles report having experienced both offline stalking and cyberstalking. The findings from the parallel multiple mediation models corroborate self-control/lifestyle theory and align with a growing body of literature indicating that low self-control has both direct and indirect effects on the risk of experiencing cyberstalking. For both genders, risk-seeking is significantly and positively associated with the risk of experiencing cyberstalking victimization, both directly and indirectly.

Keywords: change of habits, daily routines, fear of crime, structural equations, victimization

Angst vor Kriminalität, Viktimisierung und Veränderungen der Lebensgewohnheiten: Ein Strukturgleichungsmodell

Ziel dieses Artikels war es, die Theorie der Selbstkontrolle bzw. des riskanten Lebensstils auf das Risiko der Viktimisierung durch Cyberstalking in einer jüngeren Altersgruppe anzuwenden, wobei eine repräsentative Schüler*innenstichprobe aus Deutschland verwendet wurde. Die Ergebnisse zeigen, dass 18,2 % der repräsentativen Stichprobe von Neuntklässler*innen von Cyberstalking-Viktimisierung betroffen sind. Mädchen wurden häufiger viktimisiert als Jungen. Nur eine Minderheit erlebt ausschließlich Cyberstalking, während deutlich mehr Jugendliche angeben, sowohl Offline-Stalking als auch Cyberstalking erlebt zu haben. Die Ergebnisse der parallelen multiplen Mediationsmodelle stützen die Selbstkontroll-/Lebensstil-Theorie und stehen im Einklang mit einer wachsenden Anzahl von Literatur, die darauf hinweist, dass eine geringe Selbstkontrolle einen direkten und indirekten Einfluss auf das Risiko hat, Cyberstalking zu erleben. Bei beiden Geschlechtern ist die Risikobereitschaft signifikant und positiv mit dem Risiko, Opfer von Cyberstalking zu werden, verbunden - sowohl direkt als auch indirekt.

Schlagwörter: Änderung von Gewohnheiten, Kriminalitätsfurcht, Strukturgleichungen, tägliche Routinen, Viktimisierung

1. Introduction

Fear of crime and victimisation are interrelated phenomena that have gained relevance because of the consequences they can have on lifestyle, routines and even individual and collective well-being. Fear of crime has been approached from various angles, Ferraro (1996) describes it as a subjective perception of insecurity about the possibility of being a victim of crime, which is not necessarily based on direct experiences of victimisation, but on the perception of insecurity that may be influenced by social, economic and cultural factors. Whereas according to Skogan (1987), fear of crime includes both rational fear (based on personal or close environment experiences) and irrational fear, which arises from representations or narratives about crime in the media.

In this sense, the perception of insecurity can be analysed as a subjective or objective perception. In the first case, it refers to the feeling of a lack of security that people experience in their environment, whether at home, at work, or in public spaces. Some authors consider that the perception of subjective insecurity and fear of crime are often used interchangeably, although for example Mesch (2000) and Triana (2020) establish differences, in the first case they associate it with a social and general problem related to crime, while in the second they link it to the fear of being a victim of crime. Thus, fear is a feeling associated with crime, while the perception of risk or insecurity is the cognitive assessment of the possibility of danger or being a victim of crime (Mesch, 2000).

While the perception of objective insecurity or victimization is associated with having experienced some type of crime, which has a significant impact on people's well-being and their perception of security. According to Ferraro's (1996) model of 'perceived vulnerability', the experience of victimisation increases the perception of personal vulnerability, which increases fear of crime and consequently modifies life routines to avoid further risky situations.

Subjective and objective perceptions of insecurity are closely related, although they are distinct phenomena. According to Jackson and Gray (2010), fear of crime can exist independently of the experience of victimisation, but the latter significantly increases levels of fear and anxiety. Thus, fear can be triggered both by direct victimisation and by 'indirect victimisation' (Taylor & Hale, 1986), i. e., by learning about cases of people close to them or seeing news of crime in the media. Although there are authors such as Lane and Meeker (2003) who argue that victimisation is not as relevant in explaining the perception of insecurity as other variables associated with the environment and so-called social disorganisation.

This model of 'social disorganisation' proposed by Shaw and McKay (1942) and subsequently studied by authors such as Taylor and Covington (1993), Bursik and Grasmick (1993) and Sampson (1993, 2018) suggests that in contexts of high crime or violence, people develop a greater fear of crime, even if they have not been victimised. The presence of crime and victimisation generates a 'contagion effect', increasing the perception of insecurity in communities and affecting the way individuals perceive and cope with risk (Sampson et al., 2002).

This contagion effect can be explained through the characteristics of the physical environment, the presence of crime in the area, and social interactions as proposed by the ecological model (Cohen & Felson, 1979), or the excessive media coverage of crime and violence developed by the mass media or social network model (Chiricos et al., 1997; Eschholz et al., 2003; Romer & Sean, 2003; Morgan & Shanahan, 2010; Hanslmaier, 2013) and even with social and cultural factors, such as economic inequality, social exclusion and lack of trust in public institutions in charge of security as proposed by the sociological model.

It should also be considered that fear of crime will be higher to the extent that the person has less physical capacity to defend themselves (physical vulnerability), which is related to age and gender (Taylor & Hale, 1986; Riger, 1978; Stafford & Galle, 1984; Ortega & Myles, 1987; Weinrath & Gartrell, 1996; Jackson & Gray, 2010; Triana, 2020) or to the most vulnerable strata of the population (Skogan & Maxfield, 1981; Steinmetz & Austin, 2014), which explains social vulnerability. While with gender, women are more fearful of crime than men (Mesch, 2000; Hilinski et al., 2011; Liebnitzky & Montero, 2013; Ávila et al., 2016; Gélvez, 2018).

The second type of vulnerability includes income level, housing conditions, educational level and race (Collins, 2016; Triana, 2020), the latter being an important factor in some countries where minorities tend to be more associated with crime and feel more vulnerable (Cheshire, 2007; Valente et al., 2018).

In relation to income level as a variable of social vulnerability, authors such as Gélvez (2018) manage to identify an inverse relationship with the perception of insecurity, in contrast to that identified by Liebnitzky and Montero (2013), who find evidence that fear of crime is greater in the higher-income population.

In the second case, related to objective perception, it is explained in terms of previous experiences of victimisation, irrational fears or generalised anxiety as established by the psychological model (Farral et al., 2009) and the victimisation model (Garofalo, 1979; Sherman et al., 1989).

In this sense, Tseloni and Zarafonitou (2008) based on the victimization theory, reinforce the idea that an individual who has been a victim of crime has a greater perception of insecurity, so that “the personal encounter with crime, which in the fear of crime literature is termed direct victimization, and indirect victimization, which refers to a secondary crime experience, here knowing someone who has been victimized” (Tseloni & Zarafonitou, 2008, p. 390).

Whether the individual is the victim (direct victimisation) or has been victimised by family members or acquaintances (indirect victimisation), this conditions his or her fear or perception of danger. Mesch (2000), Hanslmaier (2013), Ávila et al. (2016) and Gélvez (2018), identify a relationship between these direct or indirect experiences and a greater perception of insecurity or higher levels of risk; although authors such as Bunch et al. (2015) and Triana (2020) manage to establish that it is not the crime itself that raises the perception of risk but the factors or variables that the authors call pre-existing, such as a riskier lifestyle of the victims. These authors argue that it is not the crime that affects the perception of insecurity, but the lifestyle; the activities conducted, the places frequented and the level of risk assumed, linked to the socio-economic variables of the individual.

Furthermore, in the case of recurrent activities, it is not victimisation or fear of crime that generates a change of activities, because these are recurrent and necessary in daily life. The type of activities and routines are what increase the probability of being a victim of crime and the perception of insecurity, establishing a relationship that is the opposite of that proposed by other authors.

The consequences of this perception of insecurity, whether objective or subjective, generate changes in life routines, the well-being of the population, adopting security measures, changing their activities and sometimes limiting their participation in public spaces (Kail & Kleinman, 1985; Mesch, 2000; Martínez-Ferrer et al., 2016; Ávila et al., 2016).

Modification of daily routines is a common response among those who experience an elevated level of fear of crime or have been victims of crime. This includes changes in schedules, avoiding certain areas considered dangerous, and reducing interactions in public spaces. Ferraro

(1996) suggests that these changes are self-protective mechanisms that attempt to reduce perceived vulnerability. These protective measures are related to the perception of insecurity, which is a product of crime rates or social disorganisation (Rountree & Land, 1996).

Moderating variables associated with personal characteristics such as ethnicity or race, age and gender can lead to greater changes in life routines, for example, women tend to have a greater perception of insecurity which limits their mobility (Keane, 1998) and even their night-time activities (Mesch, 2000).

Cornish and Clarke's (1986) rational choice theory argues that individuals make decisions about their daily activities by considering the balance between risks and benefits. In the context of fear of crime, this means that people avoid those routines that they perceive as risky, even if they have not experienced direct victimisation. This change, however, can have negative effects on quality of life, leading to social isolation, restricted freedoms and a constant sense of fear. Perceptions of insecurity also affect the community level, reducing social cohesion and increasing distrust between neighbours (Austin, 1991; McGarrell et al., 1997; Kanan & Pruitt, 2002). According to Sampson and Groves (1989), fear of crime fragments social relationships and decreases the sense of belonging, as people avoid involvement in community activities to reduce the risks of victimisation.

To explain these relationships, two specific theories are suggested to explain this relationship, that of lifestyle exposure (Hindelang et al., 1978) and that of exposure to routine activities (Cohen & Felson, 1979). In the first case, fear of crime "is conditioned by stable patterns of behaviour associated with demographic and socioeconomic factors such as gender, race, age and income. These factors are said to alter both voluntary and compulsory activities, modifying an individual's exposure to crime" (Rengifo & Bolton, 2013, p. 103). In the second, it is proposed that individuals engage in activities on a recurrent basis, which increases the likelihood of being a victim of crime, so that these patterns may be the cause rather than the consequence of a greater perception of insecurity.

Specifically, Averdijk (2010) outlines the consequences of this victimisation at the individual level, identifying three types: emotional, practical and cognitive. The first type includes an increased perception of insecurity or fear of crime, worry, anxiety and anger, which is further aggravated depending on the type of crime.

The practical consequences emphasise the limitations to reuse stolen objects, mobility to work or activities, and the problems resulting from the crime. The cognitive consequences are related, as Tseloni and Zarafonitou (2008) suggest, to the idea that having been a direct or indirect victim of a crime increases the perception of risk and insecurity.

It is also necessary to consider that some authors such as Averdijk (2010), on the basis of what was proposed by Hindelang et al. (1978), establish that this is not an unidirectional relationship, but on the contrary, the greater the fear of crime, the more adjustments are made to routines and these changes lead in turn to a reduction in the perception of insecurity, but these effects are limited.

In the case of Ecuador, although there are measurements and analyses of victimisation and fear of crime, in recent years it has become an issue of strategic interest at the public policy level, because of the considerable increase in the crime rate, in large cities.

As stated by Cárdenas et al. (2023, p. 18) "during the last decade, organised crime has gained ground, giving rise to the formation of gangs and mega-gangs that function as micro drug cartels. These criminal organisations are strengthened through alliances and connections at various levels".

This increase in crime is reflected in the number of homicides that between 2016 and 2022 went from 959 victims to 4 823 according to the National Directorate of Crimes against Life, Deaths, Violent, Disappearances, Extortion and Kidnappings (DINASED, 2022), which represented an increase of 403 %, placing it at 25 deaths per 100 000 inhabitants, in contrast to 2021 which was 13.7.

In addition, the practice of other crimes such as robbery, rape, contract killings, kidnapping or payment of “vaccines” to preserve life and property has increased. Although not all crimes are reported, reports of diverse types of robbery increased by 5.62 % between 2016 and 2022, while those of rape increased by 37.6 %.

Thus, the results reflect the practices of common crime in conjunction with organised crime, resulting from the scarcity of comprehensive policies that consider drug trafficking, criminal gangs, control of prisons and the strengthening of institutionality related to security and justice.

Specifically in the case of the province of Chimborazo, located in the Andean zone of Ecuador, the number of homicides has risen between 2016 and 2022 by 88 %, which, although below the national average, represents a significant increase.

Given the changes experienced in terms of victimisation in the country, reaching a growth in the homicide rate close to 600 % in certain cities in the coastal area, this research aims to analyse the fear of crime in the urban area of the capital of the province of Chimborazo, Riobamba, located in the central region of the country.

In this context, several hypotheses were put forward, the first linked to the theory of victimisation, which establishes that greater exposure to crime tends to generate changes in lifestyle or daily routines; the second establishes that a higher level of vulnerability or fear of crime (subjective perception of insecurity) also modifies routine activities. In addition, on the basis of physical and social vulnerability, moderating variables such as age, gender, level of education and income are considered. It would be expected then that being female and older would increase the fear of crime, which leads to a change in routines; the more educated and the more income the individual has, the higher the perception of insecurity and with it the modification of lifestyle.

Given the current situation in the country, the possibility of incorporating a structural equation analysis considering victimisation, fear of crime and routines as latent variables could generate relevant results to guide and focus local public policy in terms of reducing the perception of insecurity and the use of public space.

2. Methodology

2.1 Sampling

To evaluate the hypotheses, information was collected for the five urban parishes of the canton of Riobamba (province of Chimborazo), which has a population of 177,213 inhabitants over 18 years of age (INEC, 2022). The sample considered, with 95 % confidence and 5 % error, was 384 inhabitants, although a sample of 420 inhabitants was used for the treatment of the data (extreme values).

2.2 Description of the Measurements Collected

For the collection of information, an instrument divided into four sections was structured, the first one related to the consultation on the socio-economic and demographic characteristics of the respondent, associated with gender, marital status, educational level, occupation, income level and ethnicity.

Secondly, the perception of insecurity or fear of crime was asked, initially through eleven statements evaluated on a Likert-type scale, from 1 to 5, where 5 represents always and 1 represents never. These approaches were structured based on the proposed Insecurity Perception Scale (EPI), which measures different dimensions of the perception of insecurity, such as fear of crime and avoidance of places and activities. The first dimension includes the frequency of feeling unsafe when walking in the street, on public transport, in public spaces, at home or in the neighbourhood. The second dimension considers the practical and emotional consequences of this fear of crime, linked to the avoidance of walking alone, the avoidance of activities, problems in carrying them out, changes in quality of life, and feelings of stress or anxiety. In terms of victimisation, dichotomous scale (yes – no) approaches were established for direct and indirect victimisation and the type of crime: fraud, robbery, physical violence and kidnapping.

Finally, the section on life routines, also assessed on a Likert-type scale from 1 to 5, where 1 indicates that an activity or routine has never been modified and 5 indicates that it has always been done, 7 approaches were defined linked to habits such as: walking in the street, using public transport, changing schedules, frequenting a place or activity; to changes in quality of life and to emotional aspects such as problems and feelings of going away or anxiety.

For the internal validity of the instrument, Cronbach's Alpha and McDonald's Omega were used for the Likert-type response dimensions. In the case of the dimension associated with victimisation, given that it is a dichotomous scale, the Kuder-Richardson coefficient (KR-20) was considered. In both cases, the coefficients provide an acceptable measure of the internal consistency of the scale when it exceeds a value of 0.70.

2.3 Modelling

A structural equation model was used to evaluate the hypotheses; the variables in this type of model are not dependent and independent, but the observed variables, which are given by the variables or questions collected in the instrument, and the latent variables generated from these questions. These latent variables can be exogenous or endogenous, the former influencing other latent variables, while the latter are those that are affected by other exogenous latent variables.

The starting point was an exploratory factor analysis estimated by principal components, to identify the factors into which the dimensions could be grouped. The number of factors is determined through the Kaiser method, which selects the factors that explain a relevant percentage of the total variance (greater than 70 %) and have eigenvalues greater than 1.

It should be further validated that the population correlation matrix is not an identity matrix through Bartlett's test of sphericity. Only by rejecting the null hypothesis would it make sense to perform the exploratory factor analysis, since there would be correlations between the approaches that would justify its application.

To identify the factor loadings or the contribution of the observed variables to the dimension, orthogonal rotation is performed by the varimax method, so that the approaches with high loadings (greater than 0.50) are part of the factor because they are strongly correlated.

Once the factors of each dimension have been identified, the measurement model is estimated through confirmatory factor analysis, whose graphic representation is given by the path diagram. This diagram shows the relationship between the approaches (observed variables), the factors (latent variables), the covariances between them and the estimation errors that are also considered latent variables (Lepera, 2021).

This measurement model must be evaluated considering four dimensions: goodness of fit, internal consistency, convergent and discriminant validity. In the first case, indices are used to indicate how well the estimated model fits the proposed theoretical model.

These indexes are related to the goodness-of-fit chi-square or its value divided by the degrees of freedom, the comparative fit index (CFI) and the Tucker-Lewis fit index (TLI), the incremental fit index (IFI), the root mean square error of approximation (RMSEA), the standardized root mean square error (SRMR) and the coefficient of determination (CD) (Ruiz et al., 2010; Lomax, 2018).

In the case of not achieving the optimal values of the indices, it is necessary to analyse the covariances between the approaches of the same factor or construct and eliminate the one that presents the highest value and the lowest factor loading, estimating again the goodness of fit and performing the procedure until obtaining an adequate model.

The reason for this process is that if two statements of the same construct have an extremely high correlation, they are providing the same information and are reiterative, which should also be analysed from a qualitative point of view with respect to what each item intends to consult.

In addition to assessing goodness of fit, internal consistency must be analysed again through the estimation of Cronbach's Alpha, McDonald's Omega, with the final items that are part of each latent variable and that comply with the fit indices of the measurement model.

As for convergent and divergent validity, it is necessary to estimate the average variance extracted (AVE) whose values must be greater than 0.50, which is related to the fact that the factor loadings of the statements must be greater than this value and contribute to the construct.

From this measurement model, the relationships between the latent and observed variables are estimated through structural equation modelling, obtaining the direct, indirect and total effects, as well as the covariances and the parameters of the linear regression. This model must also be evaluated in terms of the fit indices described for the measurement model.

3. Results

3.1 Characterisation of the Sample

The sample used was 384 people over 18 years of age in the city of Riobamba, with an average age of 31 years, where 44.53 % of the respondents were male and 55.47 % female. They are mostly single (55.21 %), with an average of one child.

In terms of educational level, 39.27 % indicated that they had a university education and 33.77 % a baccalaureate. Only 0.52 % are illiterate and 4.19 % have a fourth level education.

About occupation, almost 40 % are employed in the public or private sector, while 20.05 % are self-employed and 31.51 % are students. Those who are employed report that they receive at most a minimum wage (83.33 %).

Finally, the largest proportion of respondents define themselves as mestizos (55.47 %), with Indigenous people (23.70 %) and Montubios (16.15 %) also making up a significant percentage. The results associated with direct or indirect victimisation show that 49.34 % of households have suffered some crime, while at the personal level the percentage is reduced to 38.4 %. The main crime was robbery with 44.27 %, and to a lesser extent kidnapping, although it represents 15.18 % of cases.

About the perception of insecurity, the highest levels of insecurity are found in the street, followed by public transport and in sports areas; people have the best perception of security at home or in the neighbourhood where they live.

In general terms, 63.02 % of respondents indicated having changed their routines because of their perception of insecurity, the main adjustment being to avoid walking alone in the street at night.

3.2 Exploratory Factor Analysis

The exploratory factor analysis was based on the estimation of the internal consistency or validity considering all the approaches of each of the dimensions, whose results, both for Cronbach's Alpha and the KR-20 satisfy the conditions of internal validity, with values above 0.70.

Based on these results, the exploratory factor analysis allowed us to group the approaches into factors for each dimension, using the principal components method. For the three dimensions, the null hypothesis of Barlett's test of sphericity is rejected, so that there is a correlation between the items that justifies the grouping.

Once the rotated matrix was estimated using the varimax method and considering only the items that showed a factor load greater than 0.50, three factors were identified in the case of the perception of insecurity, two in victimisation and one in the change of routines. With respect to the factors of the subjective perception of insecurity dimension, the first relates to fear in very public spaces, the second to fear of crime in spaces close to the home or in the home itself, and the third to the practical or emotional consequences of the perception. In terms of victimisation, the first factor is associated with general crime and burglary, while the second factor relates to other crimes with a lower frequency.

In the case of the routines, only one factor was identified in which the value of 0.50 was exceeded in all factor loading estimates, so all items were retained.

3.3 Measurement Model

Based on these results, we proceeded to conduct the confirmatory factor analysis or the measurement model, as well as the analysis of goodness of fit and the verification, after the corresponding modifications, of internal consistency or reliability.

For the perception of insecurity, we started from the initial model that considers the factors identified in the exploratory factor analysis (model 1), which was adjusted by eliminating some

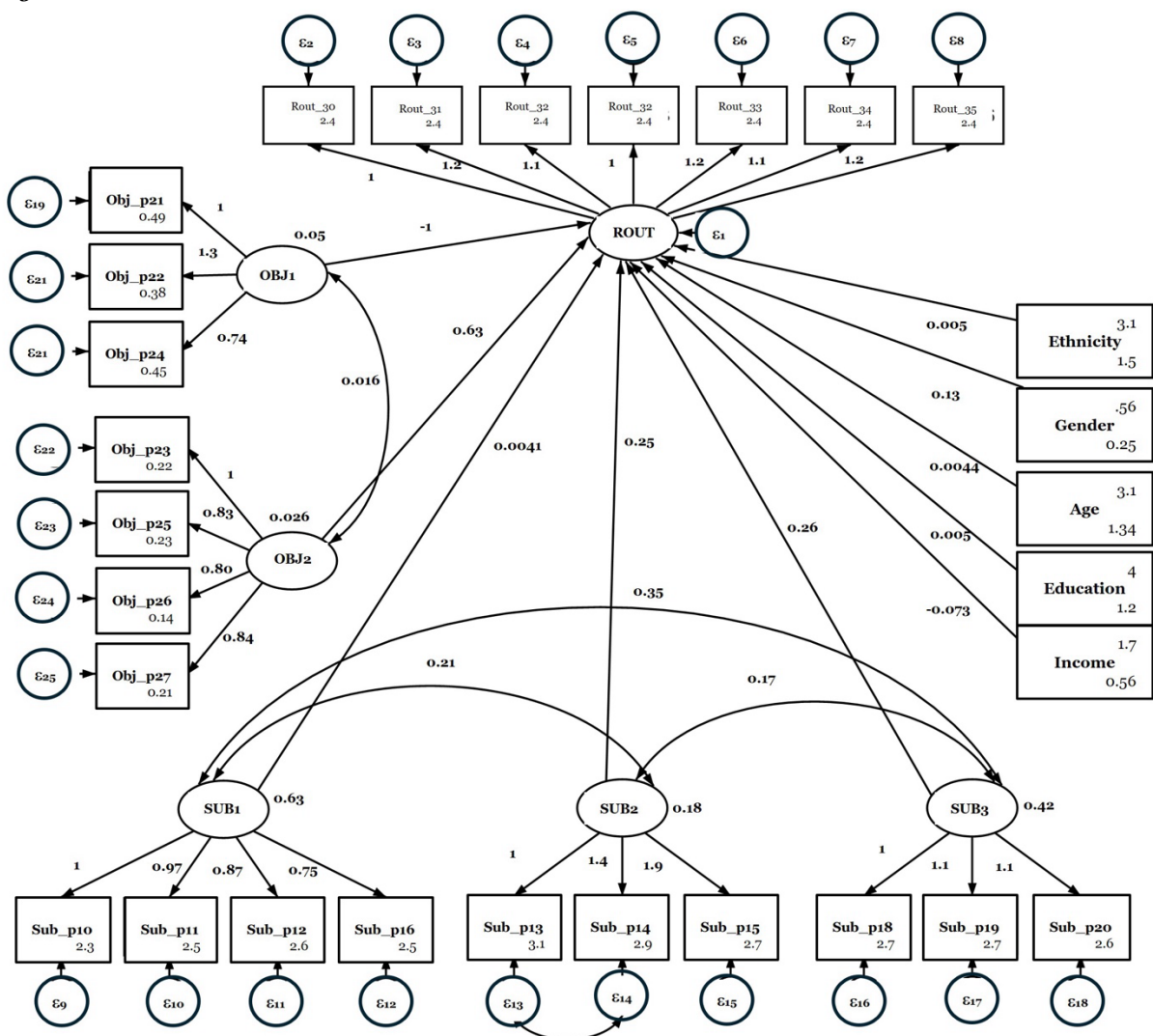
items since it did not satisfy all of the goodness-of-fit criteria, until we achieved a model that satisfied the goodness-of-fit criteria, as well as convergent and divergent validity.

Similarly, we proceeded to estimate the measurement model for victimisation with its two factors, in this case an initial model was estimated with the factors and the approaches identified in the exploratory factor analysis and a model 2 of adjustment in which the covariance between some of the approaches that are associated with theft and having been a victim of crime was incorporated; with this model we were able to satisfy the criteria of goodness of fit, as well as convergent and divergent validity.

As mentioned in the case of the change of routines, the measurement model corresponds to a single factor that groups all the approaches, the estimation of which satisfies all the established criteria without requiring adjustments. Thus, the path diagram of the measurement model would be given by the three dimensions represented by their latent variables and the covariance relationships between them.

3.4 Structural Equation Modelling

Figure 1. Structural Model



Based on the measurement models for each of the dimensions, the structural equation model proposes the testing of the theoretical relationship between changes in routines, victimisation and fear of crime, as well as the observed moderating variables of gender, age, education, income and ethnicity, as proposed by the different theories explained above.

As can be seen in Figure 1, the latent variables associated with victimisation that are given by the factors of general crime and other crimes (OBJ1 and OBJ2), as well as those of perception of insecurity with the factors of fear in public spaces, fear in a space near the home and in the home, and consequences of this perception (SUB1, SUB2 and SUB3), explain the endogenous latent variable considered as the change of routines (RUT). In addition, the observed variables indicated were incorporated.

The results of the structural equation model, whose coefficients are indicated in the path diagram next to the lines from the explanatory variables (latent or observed) to the endogenous latent variable (routines), the magnitude and sign of the relationships are evident, as detailed in Table 1.

In the case of victimisation, neither of the two latent variables or factors, general crime and theft, nor other crimes were found to be statistically significant in explaining the change in routines. While fear of crime explains the behaviour of this change, but only in terms of the perception of insecurity near the home and in those who indicated that this fear has caused consequences in terms of quality of life and emotional consequences.

Table 1. Direct and Indirect Effects

	Coefficients
Fear of public spaces (SUB1)	0.0040 (0.0840)
Fear of spaces close to home (SUB2)	0.2506* (0.1459)
Consequences of fear (SUB3)	0.2604** (0.1062)
Victimisation: General crime and robbery (OBJ1)	-0.1009 (0.3160)
Victimisation: Other crimes (OBJ2)	0.6282 (0.4978)
Gender	0.1329** (0.0650)
Age	0.0049 (0.0029)
Ethnicity	-0.0049 (0.0262)
Education	0.0050 (0.0303)
Income Level	-0.0726 (0.0446)

Note: Significant up to 1 % (***), between 1 % and 5 % (**), between 5 % and 10 % (*). Values in brackets correspond to standard errors.

Table 2. Direct Effects

Variables	Direct effects					
	ROUT	SUB1	SUB2	SUB3	OBJ1	OBJ2
Instrument routines						
Rout_p30	1.00					
Rout_p31	1.21*** (0.12)					
Rout_p32	1.11*** (0.12)					
Rout_p33	1.00*** (0.11)					
Rout_p34	1.19*** (0.12)					
Rout_p35	1.08*** (0.12)					
Rout_p36	1.19*** (0.13)					
Insecurity perception instrument						
Sub_p10		1.00				
Sub_p11		0.96*** (0.08)				
Sub_p12		0.87*** (0.7)				
Sub_p16		0.75*** (0.08)				
Sub_p13			1.00			
Sub_p14			1.44*** (0.23)			
Sub_p15			1.90*** (0.36)			
Sub_p18				1.00		
Sub_p19				1.13*** (0.13)		
Sub_p20				1.09*** (0.12)		
Victimisation instrument						
Obj_p21					1.00	
Obj_p22					1.34** (0.59)	
Obj_p24					0.74** (0.28)	
Obj_p23						1.00
Obj_p25						0.85*** (0.31)
Obj_p26						0.79*** (0.28)
Obj_p27						0.83*** (0.30)

Note: Significant up to 1 % (***), between 1 % and 5 % (**), between 5 % and 10 % (*). Values in brackets correspond to standard errors.

Thus, a greater perception of insecurity in areas close to the home and in the home itself, as well as greater consequences derived from that insecurity, result in greater adjustments to daily dynamics.

Fear of crime related to public spaces such as the street or public transport was not significant, which could be explained as routines that cannot be modified despite the existing fear, as they are part of the practices necessary for mobilisation and the fulfilment of responsibilities.

With respect to the observed variables related to socio-demographic and economic characteristics, which are explained by the theories of fear of crime and victimisation, only gender is statistically significant and shows evidence, as reported in the literature, of the physical vulnerability that women may feel. Thus, being a woman increases changes in daily routines.

As for the direct effects identified, they correspond to the values of the lines that start from the latent variables and arrive at the observed variables or the instrument's approaches, as detailed in Table 2.

Table 3. Indirect Effects

Variables	Indirect effects									
	SUB1	SUB2	SUB3	OBJ1	OBJ2	Gender	Age	Ethnicity	Education	Income
Rout_p30	0.004 (0.08)	0.25* (0.14)	0.26** (0.10)	-0.10 (0.31)	0.62 (0.49)	0.13** (0.06)	0.004 (0.002)	- 0.004 (0.02)	0.005 (0.03)	-0.07 (0.04)
Rout_p31	0.004 (0.10)	0.30* (0.17)	0.31** (0.12)	-0.12 (0.38)	0.76 (0.60)	0.16* (0.07)	0.005 (0.003)	- 0.006 (0.03)	0.006 (0.03)	-0.08 (0.05)
Rout_p32	0.004 (0.09)	0.27* (0.16)	0.28* (0.11)	-0.11 (0.35)	0.69 (0.55)	0.14* (0.07)	0.004 (0.003)	- 0.005 (0.02)	0.005 (0.03)	-0.08 (0.04)
Rout_p33	0.004 (0.08)	0.25* (0.14)	0.26** (0.10)	-0.10 (0.31)	0.62 (0.49)	0.13** (0.06)	0.004 (0.002)	- 0.005 (0.02)	0.005 (0.03)	-0.07 (0.04)
Rout_p34	0.004 (0.10)	0.29* (0.17)	0.31** (0.12)	-0.12 (0.37)	0.75 (0.59)	0.15** (0.07)	0.005 (0.003)	- 0.005 (0.03)	0.005 (0.03)	-0.08 (0.05)
Rout_p35	0.004 (0.09)	0.27* (0.15)	0.28* (0.11)	-0.10 (0.34)	0.68 (0.54)	0.14* (0.07)	0.004 (0.003)	- 0.005 (0.02)	0.005 (0.03)	-0.07 (0.04)
Rout_p36	0.004 (0.10)	0.29* (0.17)	0.31** (0.12)	-0.12 (0.37)	0.75 (0.59)	0.15** (0.07)	0.005 (0.003)	- 0.005 (0.03)	0.006 (0.03)	-0.08 (0.05)

Note: Significant up to 1% (***), between 1% and 5% (**), between 5% and 10% (*). Values in brackets correspond to standard errors.

All the statements that held for each of the factors or latent variables are statistically significant and with a positive sign. While in the indirect effects presented in Table 3, each of the statements associated with the latent variable of routines are explained by gender, the perception

of insecurity close to home and the consequences derived from that fear of crime, in an analogous way to what occurs with the latent variable change of routines.

In order to validate the goodness of fit of the structural model, after modifications in terms of considering only the covariance relationship between the statements associated with fear of crime in and near the dwelling as the largest, the indices of the coefficient of probability of errors, the base comparison and the size of the residuals were estimated (see Table 4).

Table 4. Goodness-of-fit Indices of the Structural Model.

Index	Criterion	Structural model
Likelihood ratio	Less than 3	1.466
Standardised root mean squared residual (SRMR)	Less than 0.08	0.048
Root mean squared error of approximation (RMSEA)		0.036
Comparative fit index (CFI)	Higher than	0.920
Tucker-Lewis's index (TLI)	0.90	0.903

In all cases, the criteria for evaluating the structural model in terms of goodness of fit are met, so that it can be used to evaluate the theoretical causality model between changes in routines, victimisation and fear of crime.

4. Discussion and Conclusions

Considering the hypothesis that a greater perception of insecurity and victimisation would expect a modification or change in daily routines, moderated by personal variables and based on the theories of victimisation, physical and social vulnerability, it is evident that, although half of the respondents have been direct or indirect victims of crime, this does not influence their usual activities, corroborating the findings of Triana (2020) and Bunch et al. (2015).

With respect to this perception, the results of the model indicate that fear of crime in areas close to the home does affect changes in routine activities (Mesch, 2000; Martínez-Ferrer et al., 2016; Ávila et al., 2016), but not routines linked to the use of public transport or walking down the street, which, as established by the theory of recurrent activities, are necessary actions in daily life that cannot be modified.

In this way, feeling more insecure in environments close to the home generates more vulnerability for both the person and their family, which generates more incentives to change routines, reducing exposure to being a victim.

It was also possible to identify a direct and significant relationship between the consequences of the perception of insecurity, both practical and emotional, on the change of routines; feeling stress or anxiety about the possibility of being a victim or the existence of problems derived from crime increases the risk of becoming a victim.

It was also possible to identify a direct and significant relationship between the consequences of the perception of insecurity, practical and emotional, on the change of routines; feeling stress or anxiety about the possibility of being a victim or the existence of problems arising from crime increase the frequency with which they change their daily activities, corroborating what was proposed by Averdijk (2010).

With respect to the physical vulnerability theory, there is evidence that being a woman generates more changes in daily routines; given that women are more afraid of crime than men, they

are less risky and try to minimise the possibility of being the object of a crime, as proposed by Mesch (2000), Hilinski (2011), Liebnitzky and Montero (2013), Ávila et al. (2016) and Gélvez (2018).

The theory of social vulnerability is not proven, in the sense that neither income level nor ethnicity turned out to be statistically significant in explaining the frequency with which routines are modified, despite the findings of authors such as Cheshire (2017), Gélvez (2018) and Valente et al. (2018).

The reason for this difference in the findings may be due to the fact that the sample is quite homogeneous in terms of income and ethnicity, and that it corresponds to the urban area of the canton of Riobamba, in which no neighbourhoods or districts considered marginal or minority groups can be identified.

The results of the study show that, although the situation of insecurity may be considered important in some areas of the country, its effect, at least in the Ecuadorian Andes, does not determine changes in the routine behaviour of the inhabitants. However, the fear of crime in areas adjacent to the home, does condition the modification of habits to preserve the physical and material integrity of the home.

The findings are important in terms of gender, since women, as a consequence of physical vulnerability, do modify their routines due to fear of crime or because they have been victims directly or indirectly, which is why public security policies should be designed to improve women's perception of security, as well as to reduce the rate of femicides or murders, which has increased in recent years.

Comparing these results with urban areas on the Ecuadorian coast would be important to analyse whether the difference in victimisation between the two regions has had an impact on the change in routines, and if so, to identify the activities that have been modified in order to generate strategies to minimise this impact and the deterioration of the population's quality of life.

References

- Ávila, M., Martínez-Ferrer, B., Vera, A., Bahena, A., & Musitu, G. (2016). Victimization, percepción de inseguridad y cambios en las rutinas cotidianas en México. *Revista de Saúde Pública*, 50, 1-9. <https://doi.org/10.1590/S1518-8787.2016050006098>
- Austin, D. M. (1991). Neighborhood Attributes and Crime Prevention Activity. *Criminal Justice Review*, 16(1), 17-28. <https://doi.org/10.1177/073401689101600105>
- Averdijk, M. (2010). Reciprocal Effects of Victimization and Routine Activities. *Journal of Quantitative Criminology*, 27, 125-149. <https://doi.org/10.1007/s10940-010-9106-6>
- Bunch, J., Clay-Warner, J., & McMahon-Howard, J. (2014). The effects of victimization on routine activities. *Criminal Justice and Behavior*, 41 (5), 574-592. <https://doi.org/10.1177/0093854813508286>
- Bursik, R. J., & Grasmick, H. G. (1993). Economic deprivation and neighborhood crime rates, 1960–1980. *Law & society review*, 27(2), 263-283.
- Cárdenas, S., Pita, M., Chavarrea, H., & Cárdenas, I. (2023). La evolución y consecuencias de la delincuencia organizada y el narcotráfico en el Ecuador. *Ciencia y Educación*, 4(8), 18-48.
- Cheshire, P. C. (2007). *Segregated neighbourhoods and mixed communities: A critical analysis*. Joseph Rowntree Foundation.
- Chiricos, T., Eschholz, S., & Gertz, M. (1997). Crime, news and fear of crime: Toward an identification of audience effects. *Social Problems*, 44(3), 342-357. <https://doi.org/10.2307/3097181>

- Cohen, L. & Felson, M. (1979). Social Change and Crime Rate Trends: A Routine Activity Approach. *American Sociological Review*, 44(4), 588–608. <https://doi.org/10.2307/2094589>
- Collins, P. H. (2016). Shifting the center: Race, class, and feminist theorizing about motherhood. In E. N. Glenn, G. Chang, & L. R. Forcey (Eds.), *Mothering* (pp. 45-65). Routledge.
- Dirección Nacional de Delitos contra la Vida, Muertes, Violentas, Desapariciones, Extorsión y Secuestros -DINASED- (2022). *Estadística de Seguridad Integral*. <https://www.ecuadorencifras.gob.ec/justicia-y-crimen/> (2023, 1 June)
- Eschholz, S., Chiricos, T. & Gertz, M. (2003). Television and Fear of Crime: Program Types, Audience Traits, and the Mediating Effect of Perceived Neighborhood Racial Composition. *Social Problems*, 50(3), 395-415. <https://doi.org/10.1525/sp.2003.50.3.395>
- Ferraro, K. F. (1996). Women's fear of victimization: Shadow of sexual assault? *Social Forces*, 75(2), 667-690. <https://doi.org/10.1093/sf/75.2.667>
- Fiscalía General del Estado (2021). *Ecuador: las cifras del femicidio*. Obtenido de: <https://www.fiscalia.gob.ec/estadisticas-fge/> (2023, 10 July)
- Farrall, S., Jackson, J., & Gray, E. (2009). Theorizing the Fear of Crime: The Cultural and Social Significance of Insecurity. *Social Order and the Fear of Crime in Contemporary Times*. Oxford Academic. <https://doi.org/10.1093/acprof:oso/9780199540815.003.0004>
- Garofalo, J. (1979). Victimization and the Fear of Crime. *Journal of Research in Crime and Delinquency*, 16 (1), 80-97. <https://doi.org/10.1177/00224278790160010>
- Gélvez, J. (2018). ¿Cuáles determinantes se relacionan con la percepción de inseguridad? Un análisis estadístico y espacial para la ciudad de Bogotá, D.C. *Revista Criminalidad*, 61(1), 69-84.
- Hanslmaier, M. (2013). Crime, fear and subjective well-being: How victimization and street crime affect fear and life satisfaction. *European Journal of Criminology*, 10(5), 515-533. <https://doi.org/10.1177/1477370812474545>
- Hilinski, C., Pentecost Neeson, K., & Andrews, H. (2011). Explaining the Fear of Crime Among College Women, in their own Words. *Southwest Journal of Criminal Justice*, 8(1), 112-127.
- Hindelang, M., Gottfredson, M., & Garofalo, J. (1978). *Victims of personal crime: an empirical foundation for a theory of personal victimization*. Ballinger Publishing Co.
- Instituto Nacional de Estadística y censos INEC (2022). *Estimaciones y proyecciones de población*. INEC: Quito. <https://www.ecuadorencifras.gob.ec/proyecciones-poblacionales/>
- Jackson, J., & Gray, E. (2010). Functional fear and public insecurities about crime. *British Journal of Criminology*, 50(1), 1-22. <https://doi.org/10.1093/bjc/azp059>
- Kail, B., & Kleinman, P. (1985). Fear, Crime, Community Organization, and Limitations on Daily Routines. *Urban Affairs Review*, 20, 400-408. <https://doi.org/10.1177/004208168502000309>
- Kanan, J. W., & Pruitt, M. V. (2002). Modeling Fear of Crime and Perceived Victimization Risk: The (In)Significance of Neighborhood Integration. *Sociological Inquiry*, 72, 527-548. <https://doi.org/10.1111/1475-682X.00033>
- Keane, C. (1998). Evaluating the influence of fear of crime as an environmental mobility restrictor on women's routine activities. *Environment and Behavior*, 30(1), 60-74.
- Lane, J. & Meeker, J. W. (2003). Fear of gang crime: A look at three theoretical models. *Law and Society Review*, 37(2), 425-456. <https://doi.org/10.1111/1540-5893.3702008>
- Lepera, A. (2021). Introducción a los modelos de ecuaciones estructurales y su implementación en R mediante un ejemplo. *Revista de Investigación en modelos matemáticos aplicados a la gestión y la economía*, 1(8), 15-37.
- Liebnitzky, J., & Montero, M. (2013). Miedo al crimen en estudiantes de la ciudad de Caracas. *Psicología & Sociedad*, 25(1), 152-162.
- Lomax, R. (2018). Structural equation modeling: Multisample covariance and mean structures. In G. R. Hancock & R. O. Mueller (Eds.), *The reviewer's guide to quantitative methods in the social sciences* (pp. 457-466). Routledge.

- Martínez-Ferrer, Ávila-Guerrero, M., Vera-Jiménez, D., Bahena-Rivera, A. & Musitu-Ochoa, G. (2016). Satisfacción con la vida, victimización y percepción de inseguridad en Morelos, México. *Salud Pública de México*, 58(1), 16-24.
- McGarrell, E., Giacomazzi, A., & Thurman, Q. (1997). Neighborhood disorder, integration, and the fear of crime. *Justice Quarterly*, 14, 479-500. <https://doi.org/10.1080/07418829700093441>
- Mesch, G. (2000). Perceptions of risk, lifestyle activities and fear crime. *Deviant Behavior*, 21(1), 47-62. <http://dx.doi.org/10.1080/016396200266379>
- Morgan, M., & Shanahan, J. (2010). The state of cultivation. *Journal of Broadcasting & Electronic Media*, 54(2), 337-355. <http://dx.doi.org/10.1080/08838151003735018>
- Ortega, S. T., & Myles, J. (1987). Race and gender effects on fear of crime: an interactive model with age. *Criminology*, 25, 133-152. <https://doi.org/10.1111/J.1745-9125.1987.TB00792.X>
- Rengifo, A., & Bolton, A. (2012). Routine activities and fear of crime: Specifying individual-level mechanisms. *European Journal of Criminology*, 9(2) 99-119. <https://doi.org/10.1177/1477370811421648>
- Riger, G. (1978). Women's Fear of Crime: From Blaming to Restricting the Victim. *Victimology*, 3, 274-284.
- Romer, D., & Sean, H. (2003). Television News and the Cultivation of Fear of Crime. *Journal of Communication*, 53(1), 88-104. <https://doi.org/10.1111/j.1460-2466.2003.tb03007.x>
- Rountree, P. W., & Land, K. C. (1996). Perceived risk versus fear of crime: Empirical evidence of conceptually distinct reactions in survey data. *Social Forces*, 74(4), 1353-1376.
- Ruiz, M., Pardo, A., & San Martín, R. (2010). Modelos de ecuaciones estructurales. *Papeles del psicólogo*, 31(1), 34-45.
- Sampson, R. J. (1993). Linking time and place: Dynamic contextualism and the future of criminological inquiry. *Journal of Research in Crime and Delinquency*, 30(4), 426-444. <https://doi.org/10.1177/0022427893030004005>
- Sampson, R. J. (2018). Organized for what? Recasting theories of social (Dis)organization. In E. Wairing & D. Weisburd (Eds.), *Crime and Social Organization*. <https://www.scopus.com/inward/record.uri?eid=2-s2.0-85070653634&partnerID=40&md5=077c0f4b16c41ebe7a006aaddbf2bcee> (2022, 11 October)
- Sampson, R. J., & Groves, W. B. (1989). Community structure and crime: Testing social-disorganization theory. *American journal of sociology*, 94(4), 774-802.
- Sampson, R. J., Morenoff, J. D., & Gannon-Rowley, T. (2002). Assessing "neighborhood effects": Social processes and new directions in research. *Annual Review of Sociology*, 28, 443-478. <https://doi.org/10.1146/annurev.soc.28.110601.141114>
- Shaw, C. R., & McKay, H. D. (1942). *Juvenile delinquency and urban areas*. University of Chicago Press.
- Sherman, L., Gartin, P. & Buerger, M. (1989). Hot spots of predatory crime: Routine activities and the criminology of place. *Criminology*, 27(1), 27-56. <https://doi.org/10.1111/j.1745-9125.1989.tb00862.x>
- Skogan, W. & Maxfield, M. (1981). *Coping with Crime*. Sage.
- Skogan, W. G. (1987). The Impact of Victimization on Fear. *Crime & Delinquency*, 33(1), 135-154. <https://doi.org/10.1177/0011128787033001008>
- Stafford, M., & Galle, O. (1984). Victimization Rates, Exposure to Risk, and Fear of Crime. *Criminology*, 22, 173-185.
- Steinmetz, N. M., & Austin, D. M. (2014). Fear of criminal victimization on a college campus: A visual and survey analysis of location and demographic factors. *American Journal of Criminal Justice*, 39, 511-537.
- Taylor, R. B., & Covington, J. (1993). Community structural change and fear of crime. *Social problems*, 40(3), 374-397.
- Taylor, R. B., & Hale, M. (1986). Testing Alternative Models of Fear of Crime. *Journal of Criminal Law & Criminology*, 77, 151. <https://doi.org/10.2307/1143593>

- Tseloni, A., & Zarafonitou, C. (2008). Fear of Crime and Victimization: A Multivariate Multilevel Analysis. *European Journal of Criminology*, 5(4), 387-409. <https://doi.org/10.1177/1477370808095123>
- Triana, J. (2020). Factores asociados a la percepción de inseguridad: el caso de Chilpancingo, Guerrero. *Revista de Psicología y Ciencias del Comportamiento de la Unidad Académica de Ciencias Jurídicas y Sociales*, 11(2), 112-131.
- Valente, R., Velera, S., & Guardia, J. (2018). A Structural Equation Model Estimation of the Role of Social Vulnerability as a Predictor of People's Feelings of Unsafety. *Social Indicators Research*, 143, 433-449. <https://doi.org/10.1007/s11205-018-2004-2>
- Weinrath, M., & Gartrell, J. B. (1996). Victimization and Fear of Crime. *Violence and Victims*, 11, 187-197. <https://doi.org/10.1891/0886-6708.11.3.187>

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