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Perceived insecurity and fear of crime in a city with low crime rates

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ACCEPTED MANUSCRIPT

**Abstract:**

Fear of crime is one of the most important problems in our cities, even in low-crime-rate areas. The aim of this paper is to provide evidence of the issues involved in the perceived risk of victimization and fear of crime in these contexts using the Structural Equation Model (SEM) technique. Five hundred and seventy-one people living in a working-class neighborhood of Barcelona answered a 45-item questionnaire including the following 7 constructs: perception of insecurity, previous threat experiences, social representations of insecurity, personal control and coping skills, potential aggressors, urban identity, and perceived environmental quality. Findings confirm the theoretical model, in which fear of crime is structurally related to: a) environmental features, b) personal variables, and c) social representation of unsafe places. In addition, we found that the role of social aspects is as important as that of environmental and psychological ones. Residential satisfaction and urban social identity appear as relevant variables.

**Keywords:** Perceived Insecurity, Fear of Crime, Structural Equation Model Analysis, Environmental Psychology, Urban Life.

## 1. Introduction

A fundamental idea underlies this paper: Fear of crime is one of the most significant social problems in our cities. Polls and social surveys offer data supporting this notion. Once instilled, fear grows through complex social dynamics beyond simple explanations (Curbet, 2011). Therefore, this type of urban insecurity is related to other uncertainties regarding labor, economic or emotional concerns (Hollaway & Jefferson, 1997), as well as social insecurities derived from changes in welfare state policies (Hummelsheim, Hirtenlehner, Jackson, & Oberwittler, 2011). Like social urgency, insecurity appears constantly in the media and generates both social awareness and individual fear (Dowler, 2003). Urban insecurity as the perceived risk of criminal victimization is also related to social and urban segregation (Vilalta, 2011), urban and social stigmatization (Quillian & Pager, 2010), and loss of public space as a social arena (Finol, 2005; Low, 2003; Valera, 2008).

In contrast, police data have shown a continuous decrease of crime rates in European cities. Even in America, the relationship between fear of crime and crime evolution is not well supported (Cossman & Rader, 2011). A similar phenomenon appears in victimization data: in average terms, although few people admit to being victims of crime, even if they are minor crimes, many people admit to being afraid in urban public spaces at some point (see data from the Annual Victimization Survey in the City of

Barcelona or the National Crime Victimization Survey in the USA). This inconsistency between objective security and subjective perception of insecurity has been questioned recently by Brunton-Smith and Sturgis (2011) by analyzing data from the British Crime Survey. These scholars find that "the incidence of recorded crime in a neighborhood is directly related to the level of reported fear" (p. 360). A similar effect occurs in relation to the personal victimization experience or visible signs of disorder: living near an area with a high crime rate or with ~~low~~ high-level visible signs of disorder is linked to a higher probability of worry about crime, even if one's immediate neighborhood context is kept constant (Brunton-Smith & Jackson, 2012). But when the experience of crime is inexistent, and so are signs of disorder, and the rates are low, then fear of crime as a general anxiety of the urban experience requires deep reflection and a management of the urban security policy different from the classical police measures considering, for example, the psychosocial characteristics of the social context. Therefore, several studies have pointed out the social variables of the neighborhood to explain the fear of crime effect. For example, Kanan and Pruitt (2002) highlighted the race composition of the neighborhood rather than social integration, while Quillian and Pager (2010) emphasize race composition as well as incivilities (see also Ferraro & LaGrange, 1987).

However, these studies based their analyses on variables with low incidence in cities like Barcelona. Barcelona is a city with very low crime rates, non-racial differentiation by areas, and urban public places with well-recognized quality. Despite this, fear of crime has been, for many years, one of the three most important problems perceived by its citizens. For instance, in 2006 and 2010 it was the first problem pointed out by the citizens – with 22.3% and 18.7% of the answers respectively – and in 2012 it was the second, with 13% of the answers<sup>1</sup>. However, the victimization index is low and very stable: 15.3% in 2008, 17.7% in 2010 or 17.9% in 2012, and basically, it referred to minor crimes<sup>2</sup>. This phenomenon leads us to consider this city as representative of an important number of European cities. So, what are the factors that could explain fear of crime in cities where the experience of crime and the main associated variables are non-significant? Is this the result of generalized anxiety rather than a specific worry about crime? Or could it be the consequence of a social amplification of the perceived risk, mainly derived from the media treatment? And finally, are the social variables involved in this phenomenon more determining than the individual ones?

The aim of this paper is to analyze the main variables that define the subjective perception of insecurity and fear of crime in a city with low crime rates. For this purpose, we obtained and explored data in the neighborhoods

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<sup>1</sup> Source: Municipal Services Survey. Barcelona City Council

<sup>2</sup> Source: Barcelona's Victimization Survey. Barcelona City Council. Data refer only to completed crimes.

of Barcelona's Zona Franca district, where the victimization index is close to the average victimization index of the city as a whole. From a theoretical point of view, according to previous works [(authors' references)], there have been breakthroughs in developing a conceptual model, including several classic individual, social, and environmental variables, along with new ones related to social identity and residential satisfaction.

## **2. Studying fear of crime and the subjective perception of insecurity.**

We need to express a classic distinction between fear of crime and perception of insecurity. Fear is usually related to emotional features, while insecurity is related to both risk theories and cognitive processes. The studies assuming this difference all point out that risk perception and fear of crime are well-distinguished constructs. We adopt proposals similar to the ones found in Rader (2004), who sets forth a more inclusive concept of the *victimization threat* involving three components: affective (*fear of crime*), cognitive (*perceived risk*), and behavioral (*restricted behaviors*). These three components all share complex relationships with each other.

Moreover, studies on perception of insecurity and fear of crime have been developed not only with emphasis on environmental disorders and objective crime data, but also considering social disorders and the social construction of unsafe environments. As shown in previous studies (see, for example, Miceli, Roccato & Rosato, 2004), different levels of analysis have been considered. The first level, according to statistical relevance, is the



objective crime rate. It is well established that not all crimes have the same impact on fear, and fear itself is not usually related to objective crime rates and victimization (Garland, 2005; Torrente, 2001). The second level, a low-intensity one, concerns *incivilities* because this phenomenon is usually related to social degradation and potential threats (La Grange, Ferraro & Supancic, 1992; Roché, 1993). This construct, identified by Hunter (1978) and widely developed through such theories as the *broken windows theory* (Wilson & Kelling, 1982), has provided one of the most fruitful hypotheses in relation to our subject: the greater the disorder people perceive in their neighborhood, the more concerned they are about their safety. Disorder can be both physical – for example, related to the maintenance of urban areas, vandalism, graffiti, or damage to furniture – or social – for instance, related to disordered or threatening behaviors, social incivilities, or loitering (Boyd, 2006; Fyfe, Bannister & Kearns, 2006; Phillips & Smith, 2006).

Furthermore, other variables, collectively referred to as *urban life* by Skogan and Maxfield (1981), include such aspects as crowding (Thomé & Torrente, 2003), social integration difficulties, the presence of threatening social groups, ethnic diversity (Brunton-Smith & Sturgis, 2011), social conflict (Di Masso, Dixon & Pol, 2011), building size (Newman & Franck, 1982), and degrees of urban vegetation (Kuo & Sullivan, 2001). ~~Moreover, previous studies have emphasized socio-demographic variables, such as age and gender.~~ Moreover, socio-demographic variables have been considered

as well. In this sense, despite certain critical positions (Reid & Konrad, 2004), many studies note that women, the elderly, and young people are more likely to feel fear crime than others (Amerio & Roccato, 2005; Gardner, 1990; Jackson, 2009; Lawton & Yaffe, 1980; Mesch, 2000; Saldívar, Ramos & Saltijeral, 1998; Warr, 1984). Nonetheless, there seems to be a consensus in the literature about women generally feeling a low risk of sexual assault, especially in relation to their peers (Gidyez, McNamara, & Edwards, 2006). On the other hand, the results for age are controversial (Tseloni & Zarafonitou, 2009). These findings lead us to refuse age and gender as direct indicators of vulnerability. More generally, people who perceive themselves as more physically vulnerable tend to develop a greater fear of crime and more feelings of insecurity (Cosman & Rader, 2011). The relationship between fear of crime and vulnerability (Jackson, 2004), the perception of limited capability when facing threatening situations (Moser, 1985), or the social level of tolerance regarding incivilities or risks (Torrente, 2001) complement this framework. In relation to these ideas, risk theories consider fear of crime as the interplay between emotion and cognition (Jackson, 2006). They also highlight perceived control and perceived consequence as important factors which moderate the relationship between perceived likelihood and worry about crime (Jackson, 2011), even in victimized individuals as an effect of resilience (Shippee, 2012). Moreover, social strategies and spatial configurations allow a community to

control its environment when carrying out daily activities safely, what is broadly identified as the *defensible space theory* (Newman, 1996). In addition, the social and structural characteristics of the neighborhood can influence collective efficacy and social control mechanisms (Sampson, 2009). Other times, though, the problem is not fear of crime or of the offender, but fear of the social difference (Sandercock, 2000), fear of the stranger, the outsider (Sandercock, 2005).

In Ferraro (1995), the author considered two stimuli when assessing potentially threatening situations: environmental variables and shared information about unsafe environments. In a similar way, Fernández-Ramírez & Corraliza (1996; 1997; 1998) considered two different perspectives when defining “dangerous environments”. The *neighborhood perspective* emphasizes the social dynamics involved in generating information about insecurity at the neighborhood level. Conversely, the *contextual perspective* focuses on the socio-physical features of places that people perceive as dangerous and to which they react with fear (Wilcox, Quisenberry & Jones, 2003). Recent research has shown the predominance of social factors, rather than environmental factors, in defining a place as unsafe (Acuña-Rivera, Uzzell & Brown, 2011).

Finally, various authors have considered other variables, such as residential satisfaction, place attachment, or place-identity (especially at the neighborhood level), to explain modulating effects in one’s subjective

perception of insecurity (Di Masso, Dixon & Pol, 2011; Taylor, 1996; Taylor, Shumaker & Gottfredson, 1985; Tester, et.al., 2011; Vidal, Valera & Peró, 2010). These authors' underlying hypothesis emphasizes the relationship that links feelings of safety in the neighborhood to feelings of attachment and identification, as well as their positive effects on psychosocial health (Hill, Ross & Angel, 2005; Kitchen & Williams, 2010), quality of life (Jackson & Gray, 2010; Roberts, 2012), and well-being (Franc, Prizmic-Larsen & Lipovčan, 2012; Gray, Jackson, & Farrall, 2011a; Webb & Wills-Herrera, 2012). Specifically, citizens who were concerned about neighborhood deterioration and who found the neighborhood less satisfying reported more fear (Taylor & Hale, 1986).

### *2.1. Defining an integrative model and derived hypothesis*

Analyzing urban areas requires one to adopt a multi-dimensional perspective in order to understand spatially-located phenomena, such as fear of crime and perceived insecurity, as derived from the literature mentioned above. Beyond physical-environmental aspects, we must include psychological, social, and cultural features along with complex and reciprocal relationships. Accordingly, our approach involves the proposal of a theoretical, integrative model [(authors' references)] which considers three variables as latent factors that are hypothetically related to perceived insecurity and contains different variables within each of those factors.

The first factor has been defined as *personal competence with coping*. This factor refers to one's self-assessed capability of coping with a threatening situation (Jackson, 2009) and includes variables associated with personal vulnerability and coping strategies (e.g., "if someone wanted to attack me, I think I could defend myself or prevent it"), social support ("people in my neighborhood could help me if I needed it"), and cognitive, emotional and behavioral control (e.g., one's belief in one's capacity to adopt strategies of both active and passive self-protection).

The second factor has been identified as *space representation*. This factor refers to psycho-social processes that contribute to defining socio-spatial configurations as threatening. It is related to the aforementioned *neighborhood perspective* and the social factors involved in the experience of fear of crime (Acuña-Rivera, Uzell & Brown, 2011; Kruger, 2008). Several variables are notably explicit, including previous spatially located experiences of both direct and indirect victimization. Moreover, the social context or neighborhood assessment can influence the generation of fear of crime (Brunton-Smith & Sturgis, 2011; Quillian & Pager, 2010). Other variables, such as social influence and social construction processes, are less obvious but not less important (Banks, 2005). This idea is based on the *social representations theory* as applied to environmental psychology, in which the impact of mass media (Heath & Gilbert, 1996) and security policies exert a strong influence. We also included other constructs that are

related to the global assessment of urban environments, such as residential satisfaction (Amérgo, 1997; Fried, 1982; Galster, 1981) and urban social identity (Valera & Guàrdia, 2002; Valera & Pol, 1994; Valera, Guàrdia & Pol, 1998) which, in turn, are related to each other ~~according to previous data~~ (Carro, Valera, & Vidal, 2010; Fleury-Bahi, Félonneau & Marchand, 2008; Valera & Guàrdia, 2002).

Finally, the third factor is known as *unsafe environment* according to the *contextual perspective* mentioned above. This is the most spatially-related factor and includes environmental features, such as visual access (Newman, 1996), illumination (Atkins, Husain & Storey, 1991), and damage and incivilities (Skogan, 1990; Taylor & Hale, 1986). Furthermore, we included the time of the day because its variations imply dramatic changes in the environmental configurations. Complementary socio-environmental aspects were also considered, such as potential aggressors in the public space (Quillian & Pager, 2010; Sandercock, 2000), opportunities for social support at the community level (O'Brien, 2002), or spatial occupancy patterns (Gotham & Brumley, 2002); these are all aspects that we have dealt with recently through observational techniques [(author reference)].

Figure 1 reflects the proposed model. Despite the fact that classic literature emphasizes environmental aspects as the most important factor in explaining unsafe places, we assume that social aspects will demonstrate

their influence on perceived insecurity in accordance with the most recent literature mentioned above.

INSERT ABOUT HERE FIGURE 1

### **3. Objectives and hypotheses**

The aim of this study is to analyze the main variables that define the subjective perception of insecurity and fear of crime in a city with low crime rates like Barcelona, testing the main hypothesis derived from the proposed model:

1. Perceived insecurity is directly related to three main factors: personal competences for coping with threatening situations, environmental features that can characterize the space as unsafe, even dangerous, and social processes that generate spatial representations of insecurity.
2. In cities with low crime rates, the social aspects which contribute to a social construction of urban insecurity will contribute to fear of crime more than individual competence to cope with crime. Neighborhood assessment in terms of ~~global~~ residential satisfaction or urban social identity (namely neighborhood identity) can play an important role in this social representation of place.

~~Finally, our conclusions must be contextualized in terms of the relevant social context and ideas for managing subjective impressions regarding fear of crime and perceived insecurity.~~

#### 4. Method

*Participants:* The sample used in this study comprised  $N = 571$  respondents from Barcelona's *Zona Franca* whose ages were greater than or equal to 18, who resided in the neighborhood, and who used public spaces frequently. The gender of the respondents was balanced so that we could obtain a symmetrical distribution for this variable. The sampling was empirical and accidental within each predefined zone in *Zona Franca*, paying attention to the time of the day when the survey was administered. We defined different slots throughout the day (see Table 1) and analyzed the data collection on weekdays (340) and on weekends (231). We also decided to distinguish between relatively homogeneous areas and selected independent samples from each one. By choosing the number of zones and their limits, the homogeneity criteria of public space included the functional organization of the neighborhood's socio-demographic characteristics and the urban structure of that area.

INSERT TABLE 1 ABOUT HERE

In this study, 52.5% of the sample were women with a mean age of  $M = 44.22$  years and  $sd = 18.72$ . Out of the total participants, 84.1% of the persons resided in the neighborhood, and the rest of the participants (15.9%) worked there and frequently used public spaces in the area. In total, 71.1%



admitted to not being born in the neighborhood, and the average time of residence was approximately 30 years ( $M = 27.82$ ,  $sd = 16.76$ ).

*Instruments:* We developed an original questionnaire consistent with previous studies. The first version was tested in a previous study of two districts: *Poble Sec* and *Guinardó* in Barcelona [(author's reference)]. The final version presented in this paper has been applied to residents of another area of Barcelona (*Zona Franca*). *Zona Franca* was formerly a working-class neighborhood on the outskirts of the city, with poor connectivity to the city and with recent and progressive transformations that have resulted in an emerging middle class. Among the people of Barcelona, however, the perception of socially stigmatized areas continues to generate fear of the neighborhood as unsafe (in 2012, this was the second least safe neighborhood as perceived by the citizens of Barcelona; Source: Barcelona's Victimization Survey 2013, Barcelona City Council).

The questionnaire incorporated the following previously tested subscales: subjective perception of insecurity (Cronbach's Alpha  $\alpha = 0.82$  obtained in Carro, Valera and Vidal, 2010), perceived environmental quality (most of these items are related to the classical CPTED perspective; see, for example, Vozmediano & San Juan, 2010), perceived ability to cope with potentially dangerous situations or criminals and availability of social support (based on Jackson, 2009), and a satisfaction scale of residential and

urban social identity (used in Carro, Valera and Vidal, 2010, obtaining a Cronbach's Alpha  $\alpha = 0.75$ ).

With the addition of basic demographic variables (age, gender, time and place of residence), we grouped the 45-item questionnaire with four-point response scale scores into the following constructs: perception of insecurity, previous threat experiences / previous experiences of threatening situations, social representations of insecurity, personal control and coping skills, potential aggressors in public spaces, ~~urban~~ neighborhood identity ~~and residential satisfaction~~, and perceived environmental quality. The complete questionnaire is included as Annex 1.

Finally, the estimated reliability obtained and derived from the Confirmatory Factor Analysis (CFA) yielded (in agreement with what Satorra & Saris, 1985, proposed) a Cronbach's  $\alpha = .846$  for the global scale and the following values for each factor: a)  $\alpha = .844$  for perception of insecurity; b)  $\alpha = .821$  for previous experiences of threat / previous experiences of threatening situations; c)  $\alpha = .856$  for social representations of insecurity; d)  $\alpha = .889$  for personal control and coping skills; e)  $\alpha = .872$  for potential aggressors in public spaces; f)  $\alpha = .867$  for ~~Urban~~ neighborhood identity ~~and residential satisfaction~~ and, finally, g)  $\alpha = .853$  for perceived environmental quality. In relation to construct validity, the measurement model obtained a very good fit ( $\chi^2 = 945.33$ ,  $df = 371$ ,  $p = .212$ ; Goodness of Fit Index = .971; Tucker Lewis Index = .961 and

Comparative Fit Index = .978) as an indicator of the high validity of the measurement structure proposed. Therefore the complete data for evidence of reliability and validity of the questionnaire are available from [authors' name (2012)]. In addition to the above data, we obtained evidence of the content validity and predictive validity to ensure the administration of the questionnaire used.

*Procedure:* A team of 11 interviewers was trained in advance so they could familiarize themselves with the questionnaire. The interviewers were also informed about the various areas of study previously defined. Finally, we required each interviewer to collect information on more than two areas and in different time slots. We also had the interviewers observe specific public spaces in each area for three months, but those results are beyond the scope of this article.

#### *4.1. SEM model Identification from theoretical propositions*

Based on the theoretical model presented above, table number 2 summarizes the assignments of the questionnaire's items to each of the latent variables specified in the structural model (Matrix  $A_x$  with the free parameters  $\lambda_{ij}$ ). The model measurements were configured using a confirmatory factor analysis (CFA).

INSERT TABLE 2 ABOUT HERE

The item assignment presented in the table above comes from aforementioned previous papers that assessed the possibility of proposing a measurement model with good psychometric properties. To that end, we selected, out of a base of items generated by independent experts, those presenting high internal consistency and construct validity in different studies with pilot samples and final samples. They led us to the factor structure used in this paper, displayed in table 2. Given the number of items and factors, there are certain asymmetries in the number of items assigned to each factor that should be taken into account for an adequate result interpretation. The reason for this asymmetry in the number of items lies in two arguments. The first one refers to the factors lacking the same complexity, so the number of indicators varies considerably and implies simpler or complex constructs. The second aspect relates to the fact that the questionnaire has not been refined psychometrically in order to drastically reduce the number of items and, also, partially reduce the asymmetry.

As a result of the model's configuration, we regard certain fixed parameters as latent variables to be identified by using a single indicator so that  $\lambda_{13.4} = \lambda_{16.6} = \lambda_{28.7} = \lambda_{12.11} = 1$  represents the initial value and does not contain error indicators. In this case, the observed variable is an unbiased indicator of the latent factor (e.g. age and gender are represented as a rectangle in figure 1). Structural equations derived from the previous model are as follows:

$$\eta_1 = \gamma_{11}\xi_1 + \gamma_{21}\xi_2 + \gamma_{31}\xi_3 + \zeta_1$$

$$\eta_2 = \gamma_{12}X_1 + \gamma_{22}X_2 + \gamma_{42}\xi_4 + \gamma_{52}\xi_5 + \zeta_2,$$

$$\eta_3 = \gamma_{63}\xi_6 + \gamma_{73}\xi_7 + \gamma_{33}X_3 + \gamma_{83}\xi_8 + \gamma_{93}\xi_9 + \gamma_{10.3}\xi_{10} + \gamma_{11.3}\xi_{11} + \zeta_3,$$

$$\eta_4 = \beta_{14}\eta_1 + \beta_{24}\eta_2 + \beta_{34}\eta_3 + \zeta_4.$$

The Structural Equation Model (SEM) technique requires complex statistical assumptions for which it is difficult to obtain empirical evidence of their acceptance by psychologists. In recent years, the Structural Equation Model framework has improved in quality. Now it has robust approaches to reduce the bias resulting from the malfunctioning of observed statistical distributions and previous assumptions about the Multinormal Gaussian Distribution. We chose particular solutions during the parameter estimation phase, such as the Asymptotic Free Distribution (AFD) estimation parameter and other similar propositions.

## 5. Results

We obtained the matrix of polychoric correlations (specific correlation coefficient for categorical and ordinal variables with multiple categories) for the 45 items presented in the final version. This final version had been previously applied to all the decatypes (as a descriptive index of position based on the percentiles distributions) as a transformation of their observed distributions in order to avoid the difficulties caused by the presence of different measurement scales for the original items. The only

exception was made for item number 12 (Do you remember any particular episode that happened to you or another person that subsequently made you feel uneasy in this place or in the neighborhood?), which was originally defined as open (qualitative) and was re-categorized into an ordinal scale (1: No. Never; 2: Yes, but a long time ago; 3: Yes, recently), to incorporate the information into the proposed model simply (the original correlation matrix is very large to be included in this paper, but it can be directly available by e-mailing the contact author).

Given these data and the ordinal nature of the variables transformed into decatypes, we chose to evaluate the structural model by approximating the assumptions of the Structural Equation Model (SEM). Conforming to the general precepts and assumptions of these models, we assumed the following statistical assumptions:  $E(\xi_i) = E(\eta_i) = 0$  and  $Var(\xi_i) = Var(\eta_i) = 1$ . Consequently, we assumed that the factors were also reduced and normalized variables so that  $E(\varepsilon_i\varepsilon_j) = E(\delta_i\delta_j) = E(\xi_i\delta_j) = E(\eta_i\varepsilon_j) = E(\xi_i\xi_j) = 0$ . We used this approach for the independence of measurement errors both between themselves and between any of the variables (items and factors) included in the model. Parameter estimation was performed by estimating the free parameters with an estimation technique adjusted to categorical distributions since this scale needs special attention. The work by Ory and Mokhtarian (2010) has properly shown the importance of controlling questions regarding the distributions of observable variables, such as their

associated symmetry and kurtosis. In any case, we usually choose estimation techniques that are based on robust algorithms and guarantee minimal bias in parameter population inference. In consequence, we chose the robust solution based on Asymptotically Free Distribution as the best solution according to the results by Poon and Lee (1994). For all the statistical analyses we used the Amos software version 19.0.

Table 3 shows the values obtained during this estimation process regarding the overall fit indices (table 3a) in relation to the factorials of the measurement model (table 3b). Figure 2 shows the estimation value for all the free structural parameters according to the theoretical model in Figure 1.

INSERT TABLE 3 ABOUT HERE

INSERT FIGURE 2 ABOUT HERE

Finally, assuming that the exogenous latent variables ( $\xi_i$ ) cannot be considered independent from each other, we estimated the correlation values, including  $\varphi_{ij}$ , with statistically significant values ranging from .257 to .456 ( $p < .01$ ).

After considering these results, we believe that the proposed model shows a reasonable statistical fit in terms of global indices (table 3a). It adopted values associated with the acceptance of the model (values close to 1 in NFI, NNFI, GFI, AGFI), just as the residuals and confidence intervals allow us to establish an adequate analysis of it (values close to 0 in RMSEA and CI). In addition, the value of  $\chi^2$  shows a correct, non-significant value ( $p$

= 0.092), although slightly below the recommended values (usually .10), but with the contribution of the ratio regarding the degrees of freedom ( $df$ ) within the recommended range for the adjustment (between 2 and 5). Furthermore, the standardized solution shows intensity values that conform to the model's expectations and shows a statistical significance below .001 in most cases. A brief inspection of the residuals chart established that their distribution conformed to normal values without the presence of outliers or other disturbances. Similarly, there were no difficulties in the process of convergence or previous calculations of the determinant of the correlation matrix between ordinal observed variables. Finally, the Coefficient of Determination ( $R^2 = .634$ ) shows a good level of explained variance.

We must highlight the results obtained, the estimations of the three main effects defined in the model and which have turned out statistically significant. Specifically, the coefficients linked to Perceived Insecurity as direct effects yield high values consistent with the theoretical formulations that defined them. More specifically, the effect from Unsafe Environment turned out to be the highest one ( $\beta_{34} = .678$ ;  $p < .001$ ), followed by the effect derived from Representations of Spaces ( $\beta_{14} = .599$ ;  $p < .001$ ), and finally, the effect linked to the role of Personal Competences, which turned out equally significant ( $\beta_{24} = .434$ ;  $p < .001$ ). All the remaining effects (identified by the  $\gamma_{ij}$  parameters) turned out equally statistically significant



and allow us to ensure the effect of each of the exogenous variables ( $\xi_i$ ) on the endogenous ones ( $\eta_j$ ) as predicted in the theoretical model.

## 6. Discussion

~~Derived from previous studies, a theoretical integrative model with three main factors has been proposed. In addition, two hypotheses are presented: 1) personal competence, environmental features, and spatial social presentation of unsafe places are directly related to perceived insecurity, 2) the social factor should have greater influence and its influence is modulated by residential satisfaction and urban social identity.~~

Our findings, presented in Figure 2, are consistent with the proposed model shown in Figure 1. Perceived insecurity – combining fear of crime and perceived risk of victimization – is structurally related to three key dimensions: socio-environmental features that characterize a place as unsafe (according to Fernández-Ramírez & Corraliza, 1997; 1998), personal variables and both real and perceived skills for coping with potentially threatening situations, and social representation of insecurity, namely, mixed self-reports of victimization, social influence, and level of environmental satisfaction. This result provides support to our first hypothesis and is consistent with the findings of Ferraro (1995), who notes that shared information about the danger of a place is central in defining perceived insecurity. In our case, this triadic structure is modulated by the special influence of ~~Satisfaction~~–neighborhood identity elements ( $\gamma_{21} =$

.763), representing a highly significant effect on the definition of the *representations of spaces* factor. This is a psychological factor in which personal identification with the neighborhood and the levels of satisfaction with it have a direct influence on the image of the urban environment (Fleury-Bahi, Félonneau & Marchand, 2008; Valera & Guàrdia, 2002).

In a second level of analysis, we found a dichotomy between social and individual effects. Social effects are represented by the *social influence* factor ( $\gamma_{11} = .644$ ), while individual ones are linked to the perception of *vandalism* ( $\gamma_{11.3} = .673$ ) and *unsafe environment* ( $\beta_{34} = .678$ ). Thus, social and individual aspects of insecurity are combined reasonably to describe the construct. This approach seems suitable and gives special attention to signs of statistical estimations that are congruent with the psychometric rate of perceived insecurity.

INSERT IMAGE1 ABOUT HE / INSERT IMAGE2 ABOUT HERE

If one considers the data sustaining the abovementioned dichotomy, we can observe, in line with the second hypothesis, that there is an important contribution of social aspects, very close to the contribution of environmental variables, a finding consistent with Acuña-Rivera, Uzzell and Brown (2011), or Jackson (2004). Overall, statistical estimations of cases involving social variables reveal a deeper impact than indicators related to

both personal and environmental variables. For example, when defining *unsafe environments*, the impact of strictly environmental variables, such as *visual control* ( $\gamma_{63} = .212$ ) and *illumination* ( $\gamma_{73} = .197$ ), is lower than that of social variables, such as the presence of *potential aggressors* ( $\gamma_{83} = .458$ ), *patterns of spatial occupation* ( $\gamma_{93} = .448$ ), and perceived social homogeneity or the sense of the neighborhood as a social dimension of proxemics ( $\gamma_{10,3} = .329$ ). This finding is consistent with the social diversity effect studied by Kennedy and Silverman (1985) or Quillian and Pager (2010) and what has been proven by Joong-Hwan and Sangmoon (2009) in relation to the attachment to a neighborhood and fear of crime. A similar phenomenon occurs regarding *personal competences*, in which the perceived probability of obtaining social support in threatening situations ( $\gamma_{42} = .432$ ) has a greater impact than personal coping strategies ( $\gamma_{52} = .188$ ), whether cognitive (self-conviction on coping skills), emotional (fear control), or behavioral (direct or indirect prevention behaviors). These factors can improve the perceived control as well as the risk perception about crime (Jackson, 2006).

According to Gray, Jackson and Farrall (2011), the victimization threat, as proposed by Rader (2004), is explained as a result of psycho-social processes, rather than as a result of personal or environmental factors. These processes also have a remarkable effect, as shown by the model's standardized coefficients. A possible explanation is given by the Social

amplification of the risk theory (Kasperson & others, 1998). These scholars argued that risk messages can be intensified by the effect of social processes while individuals can also attenuate or amplify their effects affecting the perceptions of people about specific concerns. In our case the media operate as amplifiers of fear of crime in a city where the rates of social diversity (as a consequence of immigration) have been improving in the last decades. This phenomenon, according to Quillian and Pager (2010), can also elicit some stereotype amplification of perceived risk of victimization because most parts of Barcelona's neighborhoods have changed their racial composition dramatically. In fact, the percentage of foreigners rose from 2% in 1998 to 18% in 2012 (source: Immigration Report, Barcelona City Council, 2012), i.e., in fifteen years it increased by 9. In this context it is easy to develop diffused anxieties about unknown people and confuse fear of crime with fear of the social difference (Sandercock, 2000), fear of the stranger, the outsider (Sandercock, 2005). These effects can, in turn, influence the neighborhood assessment in terms of residential satisfaction and, of course, force us to reconsider the social identification processes involved in the image of the district. This is an explanation for the important contribution of the *neighborhood-identity* factor on the *representations of place* as we have seen above.

In addition, the data obtained for *Age* ( $\gamma_{22} = .771$ ) in the *personal competences* factor were significant in the proposed model. The positive

value of this factor confirms previous findings regarding the variables associated with vulnerability (Amerio & Rocatto, 2005; Jackson, 2009) along with the role of individual resources for coping with danger and the consequent assessment of likelihood and situational control. This idea should be complemented by the results obtained for *gender* (Jackson, 2009). In our case, although it appears to be statistically significant, the weight of its effect ( $\gamma_{12} = .233$ ) was not as high as that expected for *age*.

Furthermore, the relevance of the chosen indicators in defining each dimension has been confirmed. We have obtained remarkable statistically significant relationships for all the cases, but not with the same intensity. Furthermore, a correlational analysis of the exogenous latent variables confirms the close relationship between the model's components.

## **7. Conclusion**

In summary, our results confirm the complexity of explicative modeling on perceived insecurity. Therefore, it is convenient to use analysis strategies such as the Structural Equation Model (SEM) to provide an account of such complexity (Jackson, 2004). In addition, it seems reasonable, also, to incorporate other variables that had not been considered previously.

It is important to incorporate data obtained by systematic observation procedures. These data could characterize urban places while considering certain environmental variables that had been assessed

systematically, as well as information concerning uses and users in a given place. There are certain advantages to using this method (Pérez, Valera, & Anguera, 2011), but now it is necessary to consider cross-observational data with questionnaire results, which joins both objective and subjective information.

It would also be interesting to incorporate other dimensions, such as information regarding real victimization data in a specific place, that is to say, information on the level of real knowledge of victimization rates, because this knowledge usually differs from the citizens' subjective perceptions. Therefore, we must study what happens when an individual adopts an unjustified risk perception and incorporates this situation into complex models, which will be notably advanced by the present analysis.

Finally, our findings lead us to consider the role of the psychosocial processes in relation to the inhabited environment, namely, urban social identity, place attachment, sense of community, etc. If these concepts are relevant for the global assessment of the urban environment (namely satisfaction with the neighborhood), then they could be important for the social construction of urban insecurities as well, including fear of crime. Some results appear in this work but further research in this area is necessary.

As a final comment, we would like to mention several limitations to the work presented here that should be taken into account for a correct

interpretation and use of the results. We will highlight the most important two. Firstly, the sample is very local and certainly neither the structure nor the model as understood are directly applicable globally to another city or context, even in cases of certain similarity. The second one, more methodological, is the asymmetry of the measurement model employed, since some very specific factors are defined by a small number of items, while other factors are defined by a more suitable number of items. This asymmetry affects the implementation of the measurement model to the different environments sampled here. Therefore, the results should be applied to other contexts with particular attention.

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ANNEX: Final version of the administered questionnaire.

**Personal safety**

**(1 very unsafe; 4 very safe)**

1. Immediately before talking to me, you felt in this space...
2. Usually, when you are in this place, you feel...
3. In relation to other areas of Barcelona you frequent, you would say this space is...

**(1 very unlikely; 4 very likely)**

4. Do you consider it likely that you may ever have a problem in this place?
5. Do you consider it likely that others may ever have a problem in this place?

**(1 never; 4 many times)**

6. In the last few weeks, how frequently have you heard other people close to you say that they had a problem in this place?
7. In the last few weeks, how many times did you have a problem in this place or did you see others having it?
8. In the last few weeks, how frequently have you been afraid that something might happen to you in this place?

**(1 very unsafe; 4 very safe)**

9. In your experience, you would say this neighborhood is...
10. In general, people close to me consider this neighborhood...
11. Most people in Barcelona probably consider this neighborhood to be...
12. Do you remember a specific incident that happened to you or someone else and which later made you feel worried when you were in this place or other similar places in the neighborhood?

**Personal Control / Support (1 absolutely disagree; 4 absolutely agree)**

13. If someone tried to rob me or assault me in this place, there are people who could help me.
14. If someone tried to rob me or assault me in this place, I could somehow defend myself and prevent it.
15. Generally I am easily scared.
16. When I am in this place, I feel I am being watched.
17. Sometimes I try to take a different path to avoid this place.
18. Sometimes I try to avoid this place if I am alone.
19. I try to carry on me an instrument that can help me defend myself or ask for help in case of trouble (Example: cellular phone, self-defense spray...)

**Presence of dangerous “others” (1 absolutely disagree; 4 absolutely agree)**

20. Frequently there are people around here who I think might try to rob or assault me or others.
21. Generally, the people who could cause me or others trouble in this place are most likely from out of the neighborhood.

**Satisfaction / Cohesion (1 absolutely disagree; 4 absolutely agree)**

22. I like living in this neighborhood.
23. Even if I could, I would not live in any other neighborhood of the city.
24. The majority of the people in this neighborhood are very close to each other.
25. The majority of the people living in this neighborhood have similar likes and habits.
26. We all know each other in the neighborhood.
27. I feel much identified with this neighborhood.

**Space description (0 minimum score – 10 maximum score)**

28. Daytime lighting.
29. Nighttime lighting.
30. Well preserved.
31. Nice.
32. Clean.
33. Busy in the daytime.
34. Busy in the nighttime.
35. Width and spaciousness

**Personal use (1 absolutely disagree; 4 absolutely agree)**

36. How frequently do you visit this place? (1 First time / Tourist; 5 Every day or almost).
- When you come here, why do you do so?
37. Take a walk
38. Dog walking
39. Meet people
40. Children leisure
41. It's a step side
42. Shopping
43. Work
44. Sport or leisure activities
45. Others

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Figure 1. Graphic representation of the theoretical model on perceived insecurity (authors' reference, 2010)

Figure 2. Graphic representation of the parameter estimation from a Structural Equation Model approach. \*  $p < .05$  \*\*  $p < .01$

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Table 1. Count of questionnaires according with the different slots

		Sampling						
		Zone 1	Zone 2	Zone 3	Zone 4	Zone 5	Zone 6	TOTAL
Hour	10-13	37	39	39	30	33	32	210
	16-19	35	32	41	34	37	33	212
	20-23	32	35	13	32	37	0	149
Total		104	106	93	96	107	65	571

Table 2. Factorial coefficients for the measurement model

<b>LATENT VARIABLES</b>	<b>ITEMS</b>
Social Influence ( $\xi_1$ )	11 9 10
Neighborhood identity ( $\xi_2$ )	22 23 27
Previous Experiences ( $\xi_3$ )	6 7 8
Social Support ( $\xi_4$ )	13
Personal Control ( $\xi_5$ )	32 33 34
Visual Control ( $\xi_6$ )	16
Illumination ( $\xi_7$ )	28
Potential Aggressors ( $\xi_8$ )	20 21
Patterns Occupation ( $\xi_9$ )	36 37 38 39 40 41 42 43 44 45
Social Support Availability ( $\xi_{10}$ )	24 25 26
Vandalism ( $\xi_{11}$ )	12rec
Representation of spaces ( $\eta_1$ )	5 6
Personal Competences ( $\eta_2$ )	14 15 17 18 19
Dangerous Environment ( $\eta_3$ )	29 30 31 35
Perceived Insecurity ( $\eta_4$ )	1 2 3 9 10
<b>OBSERVED VARIABLES</b>	<b>DESCRIPTION</b>
$X_1$	Gender
$X_2$	Age in years
$X_3$	Hour of the day



Table 3a: Fit Index for the Confirmatory Factor Analysis.

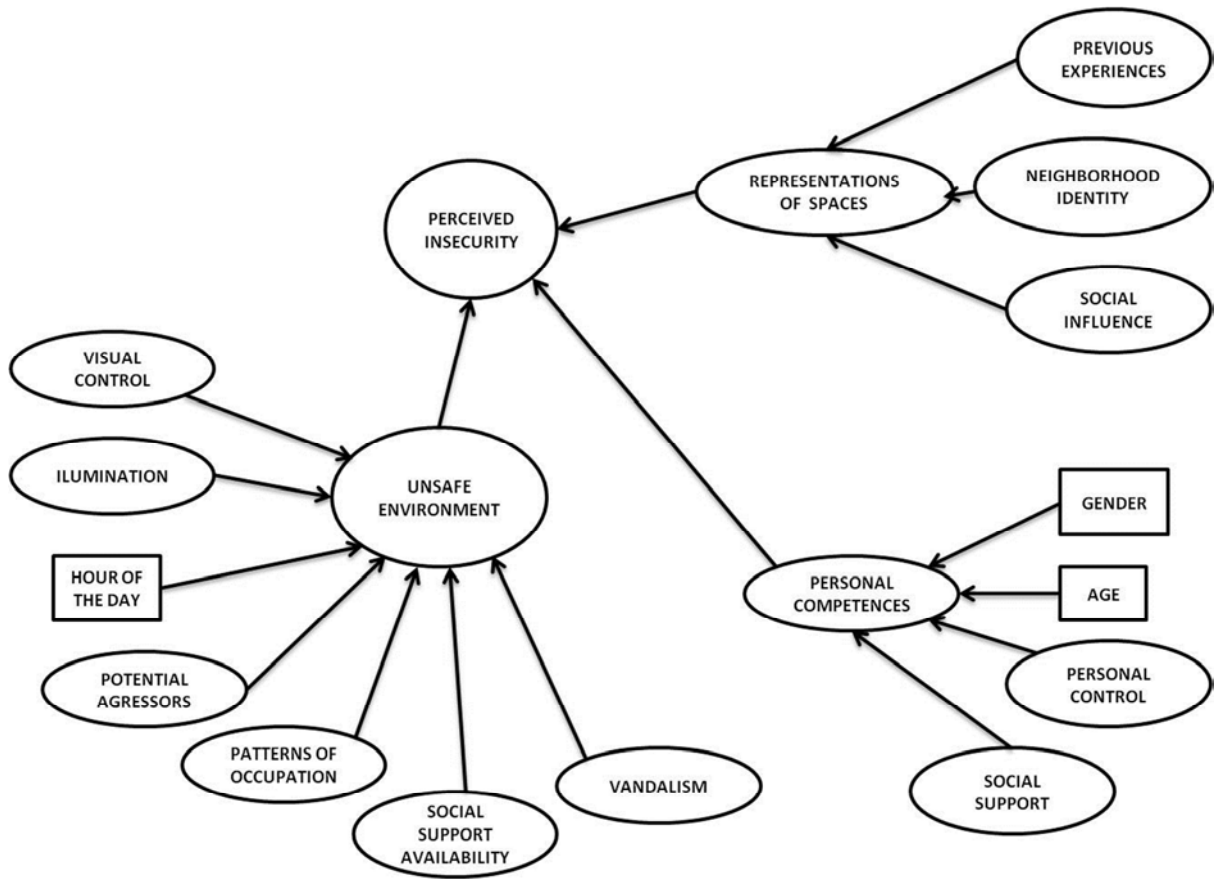
$\chi^2$	df	<i>p</i>	NFI	NNFI	GFI	AGFI	$R^2$	RMSEA	CI
2824.83	395	.092	.951	.971	.981	.972	.634	.051	.03 - .07

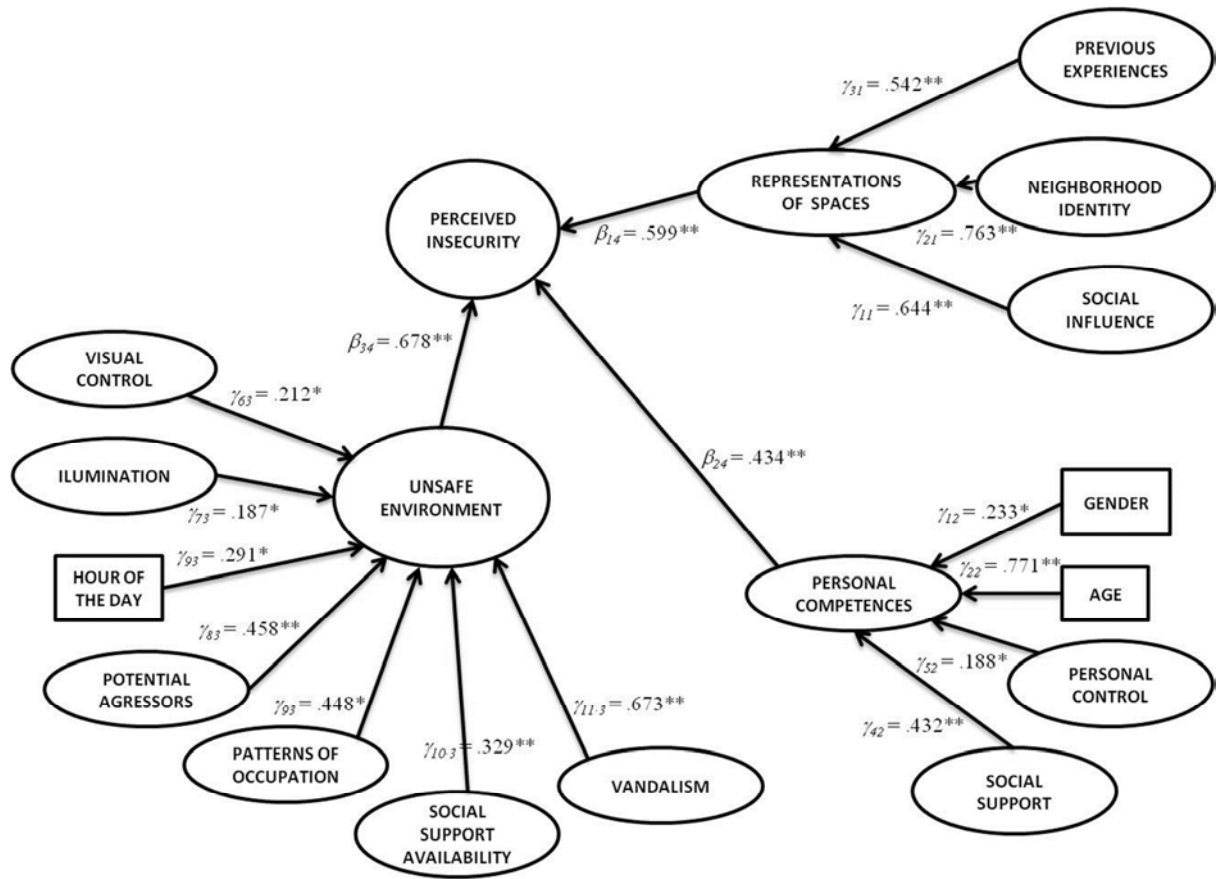
*Notes.*  $\chi^2$  = Chi-Square Statistic, NFI = Normed Fit Index, NNFI = Non Normed Fit Index, GFI = Goodness of Fit Index, AGFI = Adjusted Goodness of Fit Index,  $R^2$  = Coefficient of Determination, RMSEA = Root Mean Square Error of Approximation, CI = Confidence Interval.

Table 3b. Standardized Factorial Coefficients  $\lambda_{ij}$  for each latent variable

ITEMS	Social Influence	Neighborhood identity	Previous Experiences	Social Support Availability	Personal Control	Visual Control	Illumination	Potential Aggressors	Patterns Occupation	Social Support	Vandalism	Representation of spaces	Personal Competences	Dangerous Environment	Perceived Insecurity
1															.751
2															.702
3															.699
4														.807	
5													.823		
6													.747		
7			.771												
8			.742												
9															.672
10															.629
11	.842														
12rec											.809				
13				.668											
14													.771		
15													.643		
16						.802									
17													.634		
18													.722		
19													.604		
20								.589							
21								.724							
22		.684													
23		.721													
24											.645				
25											.723				
26											.579				
27		.748													
28							.674								
29														.657	
30														.744	
31														.781	
32					.649										
33					.727										
34					.823										
35														.844	
36									.624						
37									.577						
38									.546						
39									.571						
40									.522						
41									.501						
42									.564						
43									.591						
44									.572						
45									.529						

All values statistically significant ( $p < .01$ )





## Highlights:

- We examine fear of crime in Barcelona, a city with low crime rates.
- We use a Structural Equation Model for analysing questionnaire data.
- The social construction of unsafe places is a key factor in perceived insecurity.
- Vulnerability perception and coping strategies are relevant at a psychological level.
- Neighborhood identity is an additional factor shaping fear of crime.

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