FEAR OF CRIME AND VICTIMISATION:

A multivariate multilevel analysis of competing measurements.

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October 2007

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Key Words: Fear of crime/ Victimisation/ Multivariate Multilevel Logit Model/ Simultaneous outcomes

ACKNOWLEDGEMENTS

This study was partly carried out while Andromachi Tseloni was a Visiting SCoPiC Fellow at the Institute of Criminology and a Visiting Fellow at Clare Hall College, University of Cambridge. We are grateful to the Institute's staff, especially Professor Per-Olof Wikström, for intellectual and technical support. We would like to thank the Editor of this journal, two anonymous reviewers and the participants of the session on Spatial Criminology at the 2006 European Society of Criminology Meetings, Tübingen, and of the GERN Interlab Experience and Expression in the Fear of Crime, March 2007, Keele University, for helpful comments on an earlier version. All remaining errors are our own.

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Abstract

This study models simultaneously three commonly used indicators of fear of crime: feeling unsafe alone at home after dark, feeling unsafe walking alone after dark and worry about becoming victim of crime, over direct (being a victim) and indirect (knowing a victim) victimisation controlling for demographic and socio-economic characteristics of individuals via multivariate, i.e. multiple responses, multilevel analysis of data from Athens, Greece. The results show that: (a) the association of the three indicators weakens as key explanatory factors of fear of crime are accounted for, (b) crime experiences are related to feeling unsafe at home alone after dark only via its association with feeling unsafe walking alone after dark and worry about becoming victim of crime and (c) indirect and direct prior victimisation and crime exposure shapes predominately perceived future risk.

1. **Fear of crime and victimisation**

Empirical evidence on the relationship between past victimisation experience and feelings of fear and insecurity had been until recently inconclusive (Ferraro 1995; Gray *et al.* 2006). In a pioneering work Skogan (1987) examined the victimisation event history of 1,738 individuals in two American cities over the course of twelve months and gauged the intensity of feeling insecure after each event. He found that fear of crime increased after each repetition and especially in the case of multiple victimisations. Within high 'incivilities' environments victimisation significantly increases fear of crime possibly due to victims' inescapable socio-economic vulnerability (Box *et al.* 1988: 352)[1]. For instance, fear of crime felt by the inhabitants of deprived areas and the historic centre of Zurich was due to the disproportionally high incidence of personal crimes that they experienced in their neighbourhoods compared to other Zurich residents (Killias 2001: 309). Similarly, research based on survey data from Athens, Greece, has consistently evidenced significant positive association between fear of crime and victimisation at successive sweeps (Zarafonitou 2000, 2002).

Other studies have evidenced weak association between fear of crime and victimisation (for instance, Quann and Hung 2002). This weak relationship may be due to the mitigation of the emotions, including fear, caused by victimisation, memory decay, precautions taken subsequent to and rationalisation of the crime event (Box *et al.* 1988; Killias 2001). To complicate things further the relationship between victimisation and fear varies according to crime type. Victims of household crimes were 'slightly more fearful of crime than victims of an offence against the person' (Quann and Hung 2002: 313) according to research based on the 1989-2000 International Crime Victims Survey (ICVS). This arguably counter-intuitive finding may be explained by the victim-offender relationship. Perpetrators and victims of

personal crimes are more often than not acquainted. Victims may rationalize these events whereby diminishing fear by contrast to household victimisation where the invader is a stranger and the attack is more likely to be planned and with intent (Newhart *et al*. 1991).

Numerous studies[2] are concerned with latent fear of crime connotations, i.e. what it may stand for other than its name. Several distinguish between insecurity stemming from worry about criminal assault against family members or friends and fear due to perceiving crime as a threat to society in general (see, for instance, Furstenberg 1971; Louis-Guérin 1984; Robert and Pottier 2004). Feeling insecure due to crime is not limited to the 'perception that crime is so much a real and very serious threat, as to affect the management of daily life on a personal level' (Killias 2001: 399). Rather, it reflects citizens' anxiety about quality of life as well as doubts for the ability of relevant authorities to offer effective protection. Thus fear of crime does not stem exclusively from personal experience but also from others' experiences formulated by various information 'conduits' and it is embellished by broader concerns about modern life, all of which effectively over-estimate the extent of criminality (for instance, Hough 2004; Jackson 2004; Jackson *et al* 2006; Lupton and Tulloch 1999: 521). 'An alternative, but perhaps not incompatible research agenda, would be to pragmatically accept that fear levels have been routinely over-estimated using current survey questions.' (Farrall and Gadd 2002: 21). Indeed, the correspondence between answers to survey questions on fear of crime and actual emotional or psychological responses to crime has been largely questioned (for instance, Ferraro and LaGrange 1987). Studies by Jason Ditton, Stephen Farrall and colleagues provide consistent and strong evidence in support of spurious high levels and associations of fear of crime simply due to vague question wording which fails to

gauge information about timing, intensity and frequency (Ditton *et al*. 1999; Farrall *et al*. 1997; Farrall and Ditton 1999; Farrall and Gadd 2002).

Crime surveys historically have investigated fear of crime via questions about unsafety at home, unsafety when walking in respondents' own neighbourhood alone after dark and worry about victimisation by representative crime types, usually burglary, car crime, assault and rape (Hough and Mayhew 1983; Hales *et al.* 2000). It is only recently that has the 2003/2004 British Crime Survey (BCS) included questions on frequency and intensity of crime-related anxieties which according to earlier pilot studies record more accurately fear of crime (Ditton *et al.* 1999). Analysis by Gray and colleagues (2006) who compare answers to questions in the 2003/4 BCS on general, contained within the previous 12 months and frequency of worry about victimisation by crime type, showed that roughly 10% of respondents worry at least once a month about property crime. The proportion of those frequently worried about mugging was half the above figure. These percentages are roughly one third of the respondents who reported worry in the previous 12 months and between a sixth to a quarter, depending on crime type, of those who *generally* worry about crime (Gray *et al*. 2006, our highlighting). What is most relevant here, 'the new measures **strengthened** the association between fear of' crime and victimisation which 'controlling for other factors' together with crime rates was 'the only consistent predictor' (Gray *et al*. 2006: 24). This last finding, if replicated, seems to end the era of inconclusive research evidence on the effect of victimisation on fear of crime.

The present study is concerned with problems of operationalisation of the concept of fear of crime in so far as victimisation is variably associated with alternative constructs. It addresses the following research questions:

- To what extent competing indicators of fear of crime are associated?

- Is their relationship, if any, due to respondents' profile and victimisation experiences or persists after accounting for socio-demographic characteristics and victimisation?
- How victimisation affects alternative constructs of fear of crime?
- Is there any indicator unrelated to crime experiences, and thus in effect not signifying crime response?

The above are investigated using multivariate multilevel logit modelling (Goldstein 1995; Snijders and Bosker 1999) of alternative fear of crime measures over crime experiences and socio-demographic characteristics. *Joint* logit models of competing fear of crime constructs may appear as a more congenial term. The simultaneity of victimisation and other predictors' effects on alternative fear constructs allows answering the above research questions[3]. Thus this study addresses old questions via modern methodology (Yang *et al.* 2000) which can shed some light on the 'victimisation/ fear of crime paradox' by contrasting the relationship across competing indicators of crime anxiety.

Two types of victimisation experiences enter this analysis: personal encounter with crime which in the fear of crime literature is termed as *direct* in juxtaposition with *indirect* victimisation. The latter refers to secondary crime experience, here knowing someone who has been victimised (Taylor and Hale 1986). Indirect victimisation completes the picture of crime experience. It captures worry about the safety of people close-by which, as mentioned, plays a significant role in assessing crime anxiety. By revisiting the old idea of indirect crime experience (Taylor and Hale 1986) this work uses a broad definition of victimisation. Finally, our study employs a unique data set from Athens, Greece, thus, enriching the existing

(internationally accessible) literature with findings originated from a county with sparse (published) empirical research in the field.

Description of the data which this study draws upon and empirical findings based on simple associations come next. Section 3 discusses the empirical model of the effects of victimisation experiences on alternative but correlated fear of crime measures. Discussion of the substantive contribution of the results and suggestions for further research conclude the paper. The statistical specification of the model and statistical tests are given in Appendices.

2. **Data and simple associations**

The data for this study come from a survey on 'Insecurity, Fear of Crime and Attitudes towards the Criminal Phenomenon' which was undertaken in the Greater Athens metropolitan area in the spring of 2004. The original sample comprises 450 respondents selected on the basis of residence via stratified sampling. Questionnaires were distributed to representative residents on the basis of address in such a manner as to cover the entire area. The sampling method was the following: An initial stratification was conducted based on existing administrative subdivisions using area maps. Each subdivision was further divided into ten zones and fifteen addresses were selected within each zone. Finally from each selected household one respondent was selected following standard methodology (Van Kesteren *et al.* 2000). A self-completion questionnaire was administered to respondents to complete in the presence of field researchers (Zarafonitou 2004, unpublished research, Panteion University, Athens, Greece). For a detailed discussion of the sampling method see Zarafonitou (2000).

Respondents were asked three questions relating to fear of crime:

"How safe do you feel when you are at home alone after dark?"

"How safe do you feel walking alone in your municipality after dark?" and

"How likely do you think it is to be victimised in the near future?"

Just under a third of respondents (30.2%) reported feeling unsafe alone at home after dark. A narrow majority, i.e., 52%, reported feeling unsafe walking alone after dark and half (49.7%) the sample thought they would probably be victimised in the near future. The three measures are greatly associated with Pearson X^2 values exceeding 49 with one degree of freedom. Not surprisingly, feeling unsafe alone at home and walking alone in one's area after dark displayed the highest association. Table 1 presents cross-tabulations for each pair of measures.

<Table 1 about here >

Do people with direct or indirect victimisation experiences answer differently to these questions? Table 2 displays cross-tabulations of each fear indicator over the dichotomies of victim/non-victim (direct victimisation) and knowing/not knowing a victim (indirect victimisation) along with respective Pearson X^2 values and odds ratios. Both victimisation indicators refer to the 12 months prior to the interview. 42.7% of victims reported feeling insecure at home alone after dark. The vast (and equal) majority of victims (71.9%) felt insecure walking alone in their municipality after dark and thought it probable to have this experience repeated. 36.3% and roughly 61% of respondents who knew a victim of crime reported feeling unsafe at home and walking alone after dark, respectively. As in the case of direct victimisation the proportions are strikingly similar for feeling unsafe walking alone after dark and perceiving high likelihood of victimisation in the near future. The odds ratio is the relative likelihood of fear between (direct or indirect) victims and non-victims. Odds ratios greater than one imply that victims are more fearful that non-victims. This is the

case for all measures investigated here, especially perceived future victimisation risk. The results are in line with research based on data from previous sweeps in Athens, Greece (Zarafonitou 2002: 119). Arguably, the influence of indirect victimisation on fear is marginally lower than individual crime experience across all measurements.

<Table 2 about here >

The empirical models of this study examine the relationship between crime experiences and fear while controlling for a number of socio-economic characteristics, such as sex, age, household composition, educational and employment status, house ownership, area type and length of residence which according to previous research may be associated with fear of crime (Hale 1996; Killias and Clerici 2000). Summary statistics of the initial set of variables involved in the analysis are given in Table 3.

<Table 3 about here>

All variables are binary, namely take on values 0 or 1, except age, education and length of residence which are nominal, i.e. with more than two arbitrary defined categories. The category indicated as base in Table 3 is omitted from the later models following standard regression modelling methodology (Greene 1997) thereby the joint effect of all base characteristics is given by the intercept (see also the second paragraph of section 3.2). The number of cases with valid responses across all sample characteristics is 431.

3. **Analysis**

3.1. Modelling strategy

Each fear of crime indicator is a binary or a dummy variable with possible values, 1 and 0. The value 1 refers to feeling unsafe at home alone after dark, feeling ‘very’ or ‘fairly’ unsafe walking alone after dark within one’s municipality or

perceiving ‘very’ or ‘fairly’ likely to become a victim of crime, respectively. Zeros indicate corresponding complement events. When multiple dependent variables are simultaneously modelled these models are termed *multivariate* in juxtaposition with *multiple* which refer to many explanatory variables in a model.

The effects of indirect and direct victimisation on the three fear of crime measures are jointly estimated via *multivariate multilevel*[4] logit modelling via the statistical software programme MLwiN version 2.0 (Rasbash *et al*. 2004). Multivariate multilevel models (henceforth MVML, see e.g. Goldstein 1995; Snijders and Bosker 1999; Yang *et al.* 2000) account for the association between response variables, here, for instance, feeling unsafe at home alone after dark, feeling unsafe walking alone in one’s neighbourhood after dark and perceiving high likelihood of criminal victimisation in the near future. Conversely, the MVML approach estimates the proportion of their interdependence that is explained by indirect and past victimisation and other covariates.

If all fear of crime indicators capture this anxiety victimisation would fully account for their association and the residual correlations of the MVML logit model would be zero. By contrast, if measures of fear of crime are unrelated to crime experience they would be similarly associated whether the latter is included in the model or not. Without joint modelling of correlated alternative fear indicators victimisation effects may mask this association. Thus the MVML logit modelling is a necessary tool for investigating this study’s substantive research hypotheses outlined in the preamble to this paper. Indeed, the methodology essentially allows disentangling direct, mediated and ‘spurious’ associations between outcomes and their causes. This method expands earlier multilevel applications in criminology (e.g. Rountree *et al.* 1994; Tseloni 2000, 2006) via the joint analysis of dependent variables

(Tseloni 2007) of discrete nature (Deadman and MacDonald 2004). The MVML logit methodology arguably informs the substantive discourse on social phenomena which are more often than not inter-related and their measurement has limitations. Appendix A discusses the MVML logit regression model of this study via appropriate statistical notation and overviews its statistical advantages over single equation modelling.

Two MVML logit models of the three fear indicators have been fitted: Model 1 includes respondents' socio-demographic characteristics and indirect victimisation as measured by knowing someone who has suffered a crime in the previous year. Apart from previous year victim, i.e. direct victimisation, all respondents' attributes outlined in Table 3 above entered Model 1 but only the ones with at least one statistically significant coefficient were retained. Thus owning accommodation and two household characteristics, i.e. married and living alone, do not appear in the following discussion and Table 4. Victimisation in the previous year is added to give Model 2. Victimisation here is an endogenous variable, namely one that can arguably be predicted by respondents' characteristics which also relate to fear of crime (Tseloni 2007). Therefore adding this extra covariate to Model 1 was likely to dramatically alter coefficient estimates and standard errors due to endogeneity (see, for instance, Greene 1997). Clearly, this has not happened. Parameter estimates and standard errors are essentially unchanged between Model 1 and 2 for each covariate of each fear regression except knowing a victim with regard to feeling unsafe at home. This might be due to the fact that victimisation being a very rare event in Greece (Council of Europe 2006: 37) is not explained via the usual lifestyle /routine activities (Cohen and Felson 1979; Felson 1998; Hindelang *et al*. 1978) and social disorganisation theories (Shaw and McKay 1945) but it is rather an erratic event. Appendix B Table presents

the effects of socio-economic characteristics of respondents on victimisation in the previous year[5]. Thus the discussion focuses on the Model 2 results.

The following sub-section presents estimated random, denoted as r_{is}, $s \neq i$, and fixed parameters, denoted as $\hat{\beta}_{pi}, p = 0,1,2,...,P$, of respondents' socio-demographic characteristics and crime experiences on correlated fear of crime indicators. The former are estimated (residual) correlation coefficients between the *s-th* and *i-th* responses, namely each pair of fear indicators. $\hat{\beta}_{pi}, p = 0,1,2,...,P$ is the respective estimated coefficient of the *p*-th independent variable on the *i*-th fear of crime measure.

A baseline model, with just the constant and three estimated random parameters is given as a benchmark. The estimated random parameters are the three correlations, r_{is}, for each $s \neq i$[6]. This is the so-called multivariate 'empty' model (Snijders and Bosker 1999: 203) which estimates unconditional, i.e., when nothing else is taken into account, associations between responses, here the three fear indicators.

Table 4 displays the fixed effects of the MVML logit models while random effects are given separately in Table 5. Each fear measure heads three columns of results, i.e. the baseline intercept, Model 1 and Model 2 effects, respectively, in Table 4. Multi-parameter Wald tests which are χ^2 distributed (Greene 1997) and an indication of their statistical significance are also given in Table 4. Wald tests for the total number of covariates with their appropriate degrees of freedom are presented in the rows ending each model in Table 4. The last column displays Wald tests with three degrees of freedom which test for the statistical significance of each covariate on all three fear constructs jointly.

Estimated fixed effects in Table 4 are presented as $\exp(\hat{\beta}_{pi}), p = 1,2,...,P$, to facilitate interpretation. They give the multiplicative effect on the odds[7] of each fear indicator due to the respective characteristic. For instance, men have 62% lower odds of feeling unsafe at home alone after dark than women of otherwise similar characteristics and crime experience[8]. Each estimate in Table 4 has an indication of its statistical significance. This is based on Wald tests, which are χ^2 distributed with one degree of freedom.

Table 5 presents three sets of the three (residual) correlations between fear indicators, i.e. one from each fitted model starting with the "empty" one. As above, each estimated correlation gives an indication of its statistical significance based on Wald tests with one degree of freedom. Wald tests for the entire correlation matrix of each model with three degrees of freedom are presented in the last row of Table 5. We shall now discuss the fixed parameters of Model 2 from Table 4.

3.2. Fixed Effects

Male, victimisation, knowing a victim, living one to five years in the same borough, 35 to 54 years of age and in paid work significantly affect, in this order, all fear indicators of this study according to the Wald tests in the last column of Table 4. The Wald tests of the last row of Table 4 indicate that all covariates are important in predicting any fear indicator. The respective best and least overall well-fitted model is on feeling unsafe walking alone in one's area of residence and at home alone after dark.

Since all covariates are binary or categorical each intercept in the following estimated MVML logit model entails the effects of all the base characteristics on the respective fear of crime measure. It thus gives the log odds of the corresponding

crime response by a non- working female over 55 years old without children in her household, with primary or no education and living outside the commercial centre of her municipality for more than five years. This fictitious lady has not been victimised nor knows someone who has been crime victim in the previous year. Her respective estimated probabilities of feeling unsafe at home, walking in one's area alone after dark and perceiving high future victimisation risk are 0.56, 0.79 and 0.44, respectively[9]. How departures from this fictitious individual may alter fear of crime is discussed next.

Victimisation increases the odds of feeling unsafe at home or walking in one's area alone after dark and perceiving high future victimisation risk by 69, 166 and 193%, respectively (see Model 2, Table 4). Arguably, the better the fear indicator captures its theoretical sense, i.e., response to crime, rather than other things conveniently termed as 'quality of life' (see, for instance, Jackson 2004) the higher the effect of direct crime experience on such response. Similarly, knowing a victim increases the odds of feeling unsafe walking alone after dark and perceiving victimisation a likely event by 79 and 128%, respectively. Note that indirect and direct victimisation effects on feeling unsafe at home alone after dark fail to pass the usual 5% level of (two-tailed) statistical significance test[10].

Men report 83% lower odds of feeling unsafe walking alone after dark and roughly 60% lower odds of feeling unsafe at home alone after dark or perceiving high crime risk than women. With the exception of sex control variables are not related to each fear measurement employed here. In particular, age shows a non-linear relationship with feeling unsafe but has no effect on perceived victimisation likelihood. Adults in their prime (24 to 54 years old) feel less unsafe than either younger or older people.

Being in paid work and living in the municipality's commercial centre increases the odds of perceived high likelihood of victimisation by 67% and 56%, respectively. This, arguably, reflects justified worry due to exposure even more so since neither attribute is related to feeling unsafe.

Living in the same borough between one to five years is related to roughly 50% lower odds of feeling unsafe walking alone after dark and perceived likely victimisation compared to lengthier residence. This is arguably counter-intuitive since according to theory the longer the residence the tighter the community links and local friendship networks which facilitate crime control (Shaw and McKay 1942). Fear of crime, however, reflects partly worry about change in the immediate physical and social environment (for instance, Furstenberg 1971) which unavoidably has occurred at a fast rate in Greek cities and, especially, Athens, during the last two decades. In light of this, recently settled residents might be more at ease with their newly chosen surroundings than older ones. The former make indeed part of the neighbourhood change that the latter may perceive as threats against 'quality of life'. Some evidence to this effect will be discussed in the section after next.

Finally, holding a university degree is associated with about 50% lower odds of feeling unsafe at home alone after dark. This estimate is only an indication due to lack of statistical significance at the usual 5% level therefore education seems unrelated to fear of crime.

<Table 4 about here>

3.3. Random effects

Table 5 provides the (residual) correlations between measurements of fear of crime for each model. As expected both intuitively and from earlier results (see Table

1), the highest association, 0.44, is between the two feeling unsafe measures. Inclusion of respondents' attributes and victimisation experience (i.e. Model 2 versus baseline) reduced their association by one fifth (20%). Perceived high victimisation likelihood is equally related to each 'unsafe' indicator, i.e., 0.35 or 0.34 (see baseline model). Victimisation (direct or indirect) and other covariates explain more than a third (37%) of its association with feeling unsafe walking alone after dark. The residual correlation between perceived high risk of victimisation and feeling unsafe at home alone after dark drops by 26%. There remains however non-trivial correlation between measures of fear which is not explained by our model. The highest residual correlation, 0.35, is between the two feeling 'unsafe' indicators. Each is moderately related, roughly 0.24, to perceived victimisation risk (see Model 2). Possible explanations of why these persist are put forward in the next and final section.

<Table 5 about here>

4. **Discussion**

4.1. Substantive results of the model

This study employed data on alternative fear of crime survey constructs to examine how they relate to one another and how each is affected by direct and indirect crime experience. To this end, a multivariate multilevel (MVML) logit model (for instance, Yang *et al*. 2000) whereby multiple binary responses are jointly regressed over a set of explanatory variables has been estimated. This part addresses the substantive questions outlined in the first section (see bullet points) in light of our empirical results.

The fear of crime constructs of this study, namely feeling unsafe at home, walking in their own neighbourhood alone after dark and perceiving high

victimisation risk in the near future, are highly correlated especially when the causes of such anxieties are overlooked.

Feeling unsafe at home alone after dark is not effectively due to individual or indirect crime experiences. The lack of effect of knowing a victim and victimisation on this arguably vague fear of crime indicator supports previous research evidence in favour of abandoning questions about perceived safety at home in crime surveys (Ditton and Farrall 2006). Simple bivariate analyses (see Table 2) however showed that direct or indirect victims are more likely to report feeling unsafe at home alone after dark than non-victims or those not acquainted with victims, respectively, by 59% and 51%. How does this reconcile with our empirical MVML logit modelling results of Table 4? Victimisation relates to feeling unsafe at home *in so far as* it affects the other two fear indicators. Perceived high victimisation risk and especially feeling unsafe walking alone after dark (see respective residual correlations of 0.25 and 0.35 in Table 5) intervene to bring about the simple bivariate relationship between crime experiences and feeling unsafe at home of the earlier Table 2. The simultaneous logit modelling of alternative fear constructs here revealed that this is 'spurious' association and therefore feeling unsafe at home is unrelated to crime.

Crime experience affects feeling unsafe walking alone in one's own area after dark in a straightforward manner as evidenced by the significant fixed effects of victimisation and knowing a victim (Table 4). Again had our analysis been entrely based on evidence from the earlier Table 2 we would have wrongly concluded that direct and indirect victimisation are more relevant to feeling unsafe at home rather than walking alone after dark (1.59 versus 1.54 and 1.51 versus 1.39 odds, respectively).

Personal or hear-say crime experience relates to feeling unsafe walking alone also indirectly via its moderate residual association with perceived high criminal victimisation risk (see residual correlation of 0.22 in Table 5). The latter is mostly affected by victimisation. In particular, it more than doubles and nearly triples for people who know a victim or have been victimised, respectively (see Table 4). Thus in line with recent research from the UK (Gray *et al.* 2006) the effect of victimisation, in our case both direct and indirect, **strengthens** when more precise fear of crime questions are employed. Further those with higher exposure, such as inner city residents and people who routinely go out to work, expect more to be victimised than others. Therefore perceived high victimisation risk seems to be most linked to 'real' or rational crime worries. As a result it may best gauge the concept of fear of crime compared to feeling unsafe at home or walking alone after dark[11].

Given the strong link of perceived victimisation risk with crime experience and exposure it is surprising that nearly half the sample reported such expectation (see Table 1). As mentioned, Greece is a relatively low crime country in the Western hemisphere (Council of Europe 2000). It does not follow from official data that one in two Athenians should expect to be a victim of crime. Indeed, had perceived victimisation risk been the sole outcome of 'rational' calculation based on previous experience and current crime exposure it would have been unrelated to feeling unsafe at home which, as already discussed, is extrinsic to victimisation. The same is also true for feeling unsafe walking alone after dark. Our estimated models show that this is not the case. Perceived high victimisation risk and, especially, feeling unsafe walking alone after dark remain significantly associated with feeling unsafe at home after having accounted for victimisation and other explanatory effects (see last three columns of Table 5).

4.2. Explaining the ‘unexplained’

The next paragraphs discuss what may influence modern Athenians’ victimisation expectation and feeling unsafe walking alone after dark in their own area other than previous such experience and exposure. In other words we are concerned here with what may enter the unexplained part of the correlation between measures of fear of crime. An array of things as already outlined in our short literature overview and confirmed by the respondents of this survey. One is failing to take protection measures subsequently to the crime event (Killias 2001: 402). Indeed, more than half respondents to the current survey took no preventive measures and reported either feeling ‘unsafe in general’ (31.4%) or that ‘nothing has changed’ (19.1%). Less than a quarter 23.3% had taken security measures at home (locks, alarms, etc) and 14.3% avoided certain areas. Another possible explanation focuses on the ‘social meaning’ of the notions of incivility and social cohesion (Jackson 2004: 960). Worry about crime is formulated by a series of subjective parameters, such as general social attitudes, perceived vulnerability and everyday risk[12]. In our study people who reported feeling insecure moving about at night in their own neighbourhood attributed it to the presence of many ‘foreigners’, inadequate police patrolling and deserted or badly-lit areas (23.7%, 22.9%, 15.2%, respectively). Perceived lack of social cohesion was implicated by reports on the indifference of neighbours (9.6%) and passers-by (10.4%) in the event of a criminal attack. These reasons for feeling unsafe walking alone after dark are shown in Figure 1.

<Figure 1 about here>

The above beliefs of social disintegration are intrinsic to quality of life which is another important parameter for crime anxieties. More than three quarters (76.8%) of those reporting feeling unsafe walking alone after dark were also dissatisfied with

the quality of life in their municipality. This rate was significantly lower (58.0%) for those who felt safe. Drugs (25.5%), immigrants (21.2%) and unemployment (19.9%) were the greatest problems affecting quality of life in Athens while crime was ranked fourth (13.2%). Fear of crime is also shaped by the trust of citizens to the criminal justice system and the presence of police especially if the force is willing, effective, and acceptable by the community (Box et *al.* 1988: 353). People who report higher levels of fear are also most dissatisfied with the work of the police and demand more policing (Zvekick 1997: 8). In our study almost three quarters of respondents assessed police work as not very or not at all effective (71.8%). This negative view was significantly more negative when it came from those feeling unsafe (77.6%).

4.3. Further research

The main source of information about crime is arguably the media which thus have a considerable share in shaping fear of crime. For the interest of cohesion of the narrative and parsimony of the empirical statistical model media influences have not been examined in the current work[13]. The endogenous nature of victimisation in fear of crime empirical models, i.e., that it may be influenced by the same covariates as the dependent variable(s), is arguably a common concern for these studies. Both Table 4 and Appendix B Table here show that victimisation was not associated with the other covariates in the models of this study. As mentioned, a tentative explanation is the apparent lack of systematic influences on victimisation in Greece. This however needs to be investigated when crime survey data from this country become available.

The results of this study refer to three constructs of fear of crime which were examined in a survey conducted in the Greater Athens metropolitan area in 2004. As such they are arguably limited as to their universality. Against this argument one

might be reminded that they are comparable to evidence from the 2003/4 British Crime Survey, Follow-up Questionnaire B, data (Gray *et al.* 2006) despite differences in i) fear of crime constructs (apart from feeling unsafe walking alone after dark), ii) sample origin and characteristics and iii) statistical analysis methodology. Both studies conclude that victimisation effects strengthen as fear of crime definitions improve. Further replication, for instance, on data from more countries and across a wider array of fear measurements, is the obvious next and arguably final step in the fear of crime –victimisation scientific discourse.

REFERENCES

Box S., Hale C. and Andrews G. (1988). Explaining fear of crime. *British Journal of Criminology 28*, 340-356.

Cohen, L. E. and Felson, M. (1979). Social change and crime rates and trends: A routine activity approach. *American Sociological Review 44*, 588-608.

Council of Europe. (2006). *European Sourcebook of Crime and Criminal Justice Statistics*. WODC.

Deadman, D. and MacDonald, Z. (2004) Offenders as victims of crime?: an investigation into the relationship between criminal behaviour and victimisation. *Journal of the Royal Statistical Society, Series A, Statistics in Society 167*, 53-67.

Ditton, J. and Farrall, S. (2000). *The Fear of Crime*. Aldershot: Ashgate.

Ditton, J. and Farrall, S. (2006). 'The BCS and the Fear of Crime'. Paper presented in The BCS 25th Anniversary Conference, 16-18 October.

Ditton, J., Bannister, J., Gilchrist, E. and Farrall, S. (1999). Afraid or Angry? Recalibrating the 'Fear' of crime. *International Review of Victimology 6*, 83-99.

Farrall, S. and Ditton, J. (1999). Improving the measurement of attitudinal responses: An example from a crime survey. *International Journal of Social Research Methodology 2*, 55-68.

Farrall, S. and Gadd, D. (2002). 'Fear Today, Gone Tomorrow: Do Surveys Overstate Fear Levels?' Working paper.

Farrall, S., Bannister, J., Ditton, J. and Gilchrist, E. (1997). Questioning the measurement of the fear of crime: Findings from a major methodological study. *British Journal of Criminology 37*, 657-78.

Felson, M. (1998). *Crime and Everyday Life*. 2nd edition. Thousand Oaks, CA: Pine Forge Press.

Ferraro, K. F. (1995). *Fear of Crime: Interpreting Victimisation Risk*. Albany: State University of New York Press.

Ferraro, K.F. and LaGrange, R. (1987). The measurement of fear of crime. *Sociological Inquiry 57*, 70-101.

Furstenberg, F.J. (1971). Public reaction to crime in streets. *American scholar 4/40*, 601-10.

Goldstein, H. (1995). *Multilevel Statistical Models* (2nd ed.). London: Arnold.

Gray, E., Jackson, J. and Farrall, S. (2006). Reassessing the fear of crime: Frequencies and correlates of old and new measures, *Experience and Expression in the Fear of Crime: Working Paper No. 3*. ESRC Grant RES 000 23 1108.

Greene, W. H. (1997). *Econometric Analysis*. Upper Saddle River, NJ: Prentice Hall.

Hale, C. (1996). Fear of crime: A review of the literature. *International Review of Victimology 4*, 79-150.

Hales, J., Henderson, L., Collins, D. and Becher, H. (2000). *2000 British Crime Survey (England and Wales): Technical Report*. London: National Centre for Social Research.

Hindelang, M., Gottfredson, M. R and Garofalo, J. (1978). *Victims of Personal Crime: An Empirical Foundation for a Theory of Personal Victimisation.* Cambridge: Ballinger.

Hough, M. and Mayhew, P. (1983). *The British Crime Survey: First Report*. Home Office Research Study No. 76. London: Home Office.

Hough, M. (2004). Worry about crime: Mental events or Mental states? *International Journal of Social Research Methodology 7*, 173-176.

Jackson, J. (2004). Experience and expression. Social and cultural significance in the fear of crime. The *British Journal of Criminology 44*, 946-966.

Jackson, J., Farrall, S. and Gray, E. (2006). The provenance of fear, *Experience and Expression in the Fear of Crime: Working Paper No. 2*. ESRC Grant RES 000 23 1108.

Killias, M. (2001). *Précis de criminologie*. Berne : Staempfli Editions SA.

Killias, M. and Clerici, C. (2000). Different measures of vulnerability and their relation to different dimensions of fear of crime. *British Journal of Criminology 40*, 437-450.

Louis-Guérin, C. (1984). Les reactions sociales du crime: peur et punitivité. *Revue française de sociologie 4/25*, 623-635.

Lupton, D. and Tulloch, J. (1999). Theorizing fear of crime: Beyond the rational/irrational opposition. The *British Journal of Criminology 50*, 507-523.

Maas, C.J.M. and Snijders, T.A.B. (2003). The Multilevel Approach to Repeated Measures for Complete and Incomplete Data, *Quality and Quantity 37*, 71-89.

Newhart Smith, L. and Hill, G.D. (1991). Victimization and fear of crime. *Criminal Justice and Behavior 18*, 217-239.

Quann, N.and Hung, K. (2002). Victimization experience and the fear of crime. A cross-national study, in P.Nieuwbeerta (Ed.). *Crime victimization in comparative*

perspective. Results from the International Crime Victims Survey, 1989-2000, NSCR, BJU, Den Haag, 301-316.

Rasbash, J., Steele, F., Browne, W., and Prosser, B. (2004). *A User's Guide to MlwiN version 2.0*. London: Institute of Education.

Robert, P., Pottier, M-L. (2004). Les préoccupations sécuritaires: Une mutation? *Revue française de sociologie*, 211-242.

Rountree, P.W., Land, K.C. and Miethe, T.D. (1994). Macro-micro integration in the study of victimisation: A hierarchical logistic model analysis across Seattle neighbourhoods. *Criminology 32*, 387-414.

Shaw, C.R. and McKay, M.D. (1942). *Juvenile Delinquency and Urban Areas.* Chicago University Press; Chicago.

Skogan, W.G. (1987). The impact of victimisation on fear. *Crime and Delinquency 33*, 135-154.

Snijders, T.A.B. and Bosker R.J. (1999). *Multilevel Analysis: An Introduction to Basic and Advanced Multilevel Modeling*. London: SAGE.

Taylor, R. and Hale, M. (1986). Testing alternative models of fear of crime. *The journal of criminal law and criminology 77*, 151-189.

Tseloni, A. (2000). Personal criminal victimisation in the U.S.: Fixed and random effects of individual and household characteristics. *Journal of Quantitative Criminology 16*, 415-442.

Tseloni, A. (2006). Multilevel modelling of the number of property crimes: Household and area effects. *Journal of the Royal Statistical Society Series A-Statistics in Society 169*, 205-233.

Tseloni, A. (2007). Fear of Crime, Perceived Disorders and Property Crime: A Multivariate Analysis at the Area Level. In Farrell, G., Bowers, K., Johnson, S.D. and Townsley, M. (eds.) *Imagination for Crime Prevention: Essays in Honour of Ken Pease. Crime Prevention Studies*, vol. 21. Monsey, NY: Criminal Justice Press, 163-185.

Van Kesteren, J., Mayhew, P., Nieuwbeerta, P. (2000). *Criminal Victimisation in Seventeen Industrialised Countries*, NSCR.

Yang, M., Heath, A. and Goldstein, H. (2000). Multilevel models for repeated binary outcomes: Attitudes and vote over the electoral cycle. *Journal of the Royal Statistical Society, A, Statistics and Society 163*, 49-62.

Zarafonitou C. (2000). Εμπειρική διερεύνηση του φόβου του εγκλήματος σε ένα δήμο της ελληνικής πρωτεύουσας [Empirical study of the fear of crime in a municipality of Athens], στο Δασκαλάκη Η. & ά. (Επιμ.) *Εγκληματίες και θύματα στο κατώφλι του 21^{ου} αιώνα* [In Daskalaki *et al*. (ed.) *Offenders and victims at the threshold of 21st*

century], Εθνικό Κέντρο Κοινωνικών Ερευνών [National Centre for Social Research], Athens, 511-519 (in greek).

Zarafonitou, C. (2002). *Ο Φόβος του Εγκλήματος [Fear of Crime]*, Μελέτες Ευρωπαϊκής Νομικής Επιστήμης/European Studies in Law, Διεύθυνση: Π.Δαγτόγλου, Ν.Κουράκης, Μ.Σταθόπουλος. Αθήνα-Κομοτηνή: Εκδόσεις Αντ. Σάκκουλα. [Athens: Sakkoulas Publishers],

Zarafonitou C. (2004). Insecurity, fear of crime and attitudes of the inhabitants of Athens to the criminal phenomenon. Unpublished Research Report, *Panteion University*, Athens (in greek).

Zarafonitou, C. and Mantoglou, A. (2000). Η κοινωνική αναπαράσταση του εγκλήματος και του εγκληματία [Crime and offender's social depiction] In N. Κουράκης [N. Kourakis] (ed.) *Αντεγκληματική Πολιτική ΙΙ*, Σειρά Ποινικά [*Anti-Crime Policy II*, Penal Series]. Αθήνα-Κομοτηνή: Εκδόσεις Αντ. Σάκκουλα. [Athens-Komotini: Sakkoulas Publishers], 77-121 (in greek).

Zvekick, U. (1997). Les attitudes des victimes envers la police et la punitivité: résultats des sondages internationaux de victimisation. *Revue Internationale de Criminologie et de Police Technique 1*, 3-16.

Table 1: Association between measures of fear of crime (percentages).

	Safe walking[2]	Unsafe walking[2]	Perceived low victimisation risk	Perceived high victimisation risk	Total
Safe at home[1]	43.6	26.2	42.9	26.9	69.8
Unsafe at home[1]	4.4	25.8	7.4	22.7	30.2
Perceived low victimisation risk	32.9	17.4			50.3
Perceived high victimisation risk	15.1	49.7			49.7
Total	48.0	52.0	50.3	49.7	100.0

[1] Alone after dark.
[2] Alone after dark in the borough of residence.

Table 2: Victimisation and fear of crime measures

	Unsafe at home	Unsafe Walking	Perceived high victimisation risk
	Victimisation in the previous year		
Not a victim	26.9%	46.8%	43.9%
Victim	42.7%	71.9%	71.9%
Pearson χ^2 (p-value)	8.4 (0.004)	17.9 (0.000)	22.2 (0.000)
Odds ratio	1.59	1.54	1.64
	Indirect victimisation in the previous year		
Not knowing anyone victimised	24.1%	43.5%	38.4%
Knowing a victim	36.3%	60.5%	60.9%
Pearson χ^2 (p-value)	7.6 (0.006)	12.4 (0.000)	21.8 (0.000)
Odds ratio	1.51	1.39	1.59

Table 3: Description of variables[a]

Dependent Variables:	% Frequency
Fear of Crime Measures	
Unsafe walking alone after dark in the borough of residence	52.0
Unsafe at home alone after dark	30.2
Perceived high victimisation risk	49.7
Covariates:	
Demographic and Socio-economic characteristics	
Male	51.0
Married	52.9
Children	49.2
Living alone	14.4
Age	
Age 15-24 years old	19.3
Age 25-34 years old	27.8
Age 35-44 years old	22.3
Age 45-54 years old	14.2
Age 55 years old or older (base)	16.4
In paid work	69.4
Education	
None or Primary education (base)	17.2
Secondary education	51.5
Tertiary education	31.3
City centre residence	41.1
Own accommodation	69.2
Length of residence at the same area	
Less than a year	4.9
One to five years	22.0
Five years or more (base)	73.1
Crime experience	
Indirect: Knowing a victim in the previous year	49.9
Direct: Victim in the previous year	20.6
Number of valid cases	431

[a] All variables are binary (0/1) except age, education and length of residence which are nominal. In the later models the attribute indicated as base is omitted and the joint effect of all base characteristics is given by the intercept.

Table 4: Fixed effects on feeling unsafe walking alone after dark in the borough of residence, feeling unsafe at home alone after dark and worry about criminal victimisation via multivariate multilevel modelling.

	Unsafe at home alone after dark			Unsafe walking alone after dark in the borough of residence			Perceived high victimisation risk			*Wald test* [a] *(d.f.=3)*
	Baseline	Model 1	Model 2	Baseline	Model 1	Model 2	Baseline	Model 1	Model 2	
Intercept $(\hat{\beta}_{0i})$	-0.84***	0.32	0.23	0.08	1.44***	1.30***	-0.01	-0.02	-0.24	
					$Exp(\hat{\beta}_{pi})$					
Male		0.38***	0.38***		0.17***	0.17***		0.39***	0.39***	62.58***
Children		1.59	1.60		1.38	1.42		1.46	1.53	3.61
Age groups (55 or older)										
Age 15-24 years old		0.46	0.51		0.57	0.65		0.70	0.81	1.87
Age 25-34 years old		0.41**	0.45*		0.35**	0.39**		0.66	0.78	5.36
Age 35-44 years old		0.34***	0.37**		0.29***	0.32***		0.52	0.59	9.44**
Age 45-54 years old		0.49*	0.52		0.38**	0.40**		0.41**	0.43**	7.32*
In paid work		0.89	0.87		1.55	1.51		1.67*	1.67*	6.40*
Education (None or Primary)										
Secondary education		0.68	0.63		0.71	0.63		1.13	1.01	2.74
Tertiary education		0.49*	0.45*		0.60	0.53		0.72	0.64	4.83
City centre residence		1.19	1.21		1.14	1.18		1.50*	1.56**	4.24
Length of residence at the same borough (Five years or more)										
Less than a year		1.80	1.80		1.46	1.45		0.78	0.77	2.13
One to five years		0.60	0.60		0.50**	0.50**		0.48***	0.48***	10.70**
Knowing a victim in previous year		1.58**	1.46		1.98***	1.79***		2.49***	2.28***	17.95***
Wald test (d.f.=13)		*53.56***	*50.96***		*74.25***	*70.49***		*54.46***	*49.11***	
Victimisation in the previous year			1.69*			2.66***			2.93***	21.60***
Wald test (d.f.=14)			*55.63***			*78.59***			*62.18***	

* 0.10 > p-value > 0.05; ** 0.05 > p-value > 0.01; *** 0.01 > p-value.

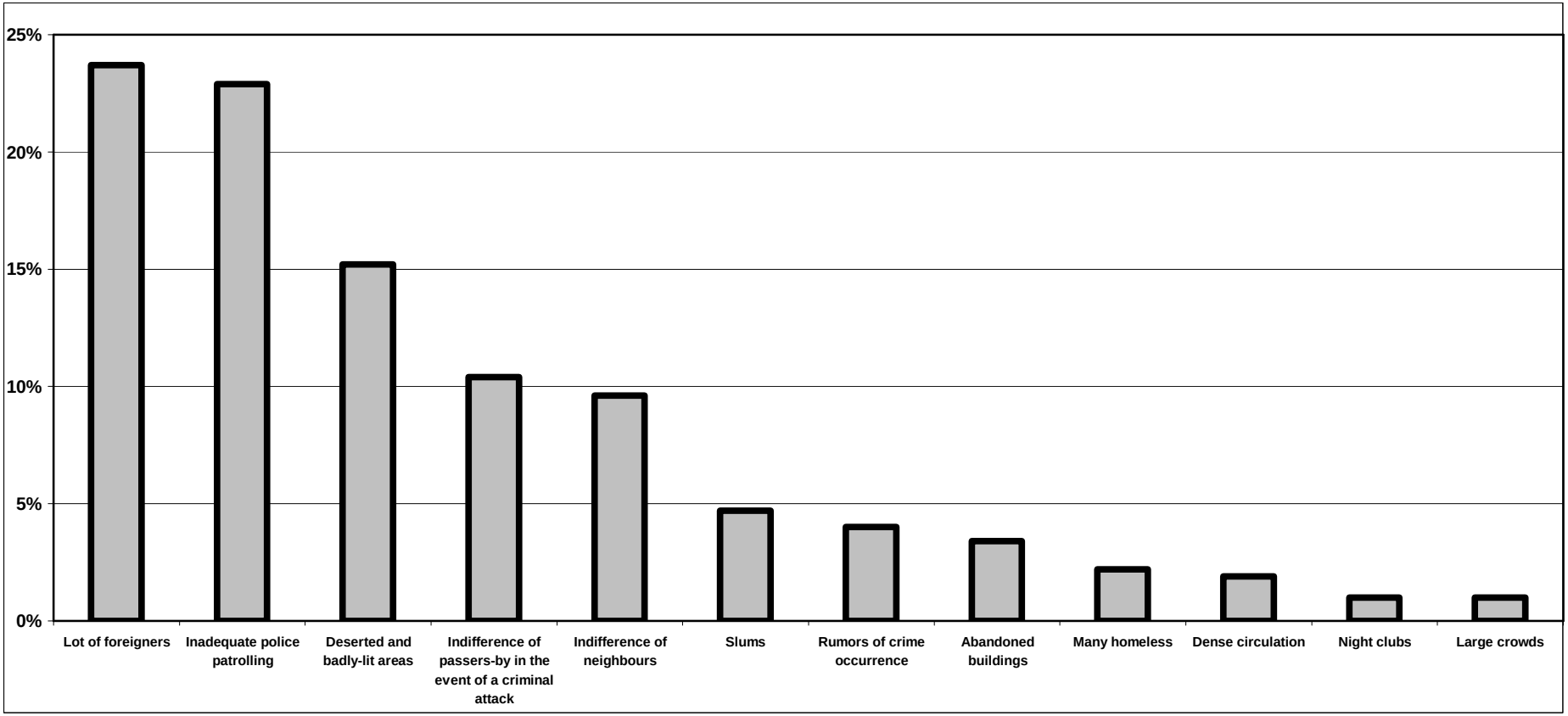
[a] Deviance values refer to the joint effect on all responses of each respective covariate of Model 2.

Table 5: Residual correlation of feeling unsafe walking alone after dark in the borough of residence, feeling unsafe at home alone after dark and perceived high criminal victimisation risk via multivariate multilevel modelling.

	Baseline			Model 1			Model 2		
	Unsafe at home alone after dark	Unsafe walking alone after dark in the borough of residence	Perceived high victimisat-ion risk	Unsafe at home alone after dark	Unsafe walking alone after dark in the borough of residence	Perceived high victimisat-ion risk	Unsafe at home alone after dark	Unsafe walking alone after dark in the borough of residence	Perceived high victimisat-ion risk
	Between-Respondents Estimated Correlations (r_{is}) i≠s, i,s=1,2,3								
Unsafe at home alone after dark	1			1			1		
Unsafe walking alone after dark in the borough of residence	0.44***	1		0.37***	1		0.35***	1	
Perceived high victimisation risk	0.34***	0.35***	1	0.27***	0.25***	1	0.25***	0.22***	1
Wald test (d.f.= 3)			218.73***			*120.35***			*105.66***

* 0.10 > p-value > 0.05; ** 0.05 > p-value > 0.01; *** 0.01 > p-value.

Figure 1: Reasons for feeling unsafe walking alone after dark in their own municipality



Appendix A:

The multivariate multilevel Logit model of competing fear of crime measures.

Let Y_{ij}, $i = 1,2,3$, indicate the three response variables of interest; $Y_{1j} = 1$ denotes feeling unsafe at home alone after dark, $Y_{2j} = 1$ feeling unsafe walking alone after dark in one's borough, and $Y_{3j} = 1$ perceiving high victimisation risk in the near future. Index $j = 1,2,...,N$ denotes *j-th* respondent and *N* is the total number of respondents in the sample. Under this notation, Y_{ij} is the observed value of the *i-th* response variable by respondent *j*. Each observed response (with values 0 or 1) follows the Binomial distribution (Yang *et al*. 2000), i.e., $Y_{ij} \sim Bin(1, \pi_{ij})$, where π_{ij} is the probability that individual *j* has a positive (i.e., value 1) crime response *i*. Let x_{pj}, $p = 1,2,...,P$ denote each of the *P* covariates included in the analysis, as measured for respondent *j*. β_{0i} is the non-random intercept of the regression equation for the *i-th* response variable and β_{pi}, $p = 1,2,...,P$, denotes slope coefficients. The data here have a 2-level hierarchical structure, i.e. one for the response variable (*i*) and a second for respondent (*j*). The lowest level for the response variable (*i*) simply defines the multivariate structure and offers no random variation to the regression model. We introduce random variation for the intercept between respondents (*j*) via

$$\beta_{ij} = \beta_{0i} + u_{ij} . \qquad (1)$$

Here u_{ij} is an inter-respondent random effect capturing level-2 (co-)variation. The diagonal terms of the covariance structure at the second level for respondent (*j*) are constrained to follow the binomial variance $\pi_{ij}(1-\pi_{ij})$ and only the off-diagonal terms are estimated. If we let $z_{sij} = \begin{cases} 0, & s \neq i \\ 1, & s = i \end{cases}$, $s, i = 1,2,3$, denote a dummy variable

assuming the value 1 when $s = i$ and 0 otherwise, then the MVML logit model (Goldstein 1995; Yang *et al*. 2000) is written as

$$\log it(\pi_{ij}) = \sum_{s=1}^{3} z_{sij}\left(\beta_{0s} + \sum_{p=1}^{P}\beta_{ps}x_{pj} + u_{sj}\right) \qquad (2)$$

Effectively, z_{sij} values are such that only relevant terms are retained in any of the models. As mentioned above, $\sigma^2_{u_i}$, i.e., the between respondents unexplained variance of the *i-th* response variable, is constrained to follow the binomial variance. $\mathrm{cov}(u_{sj}, u_{ij}) = \sigma_{u_{si}}$, $s \neq i$, is the between respondents unexplained covariance between the *s-th* and *i-th* responses. The results section presents the estimated correlation rather than variance-covariance matrix of random parameters. Therefore the diagonal terms (in place of respective variances) of Table 5 are 1's and the off-diagonal terms give (residual) correlation coefficients, ρ_{is}, $s \neq i$, (rather than covariances) between the *s-th* and *i-th* responses.

The advantages of the MVML of correlated responses are manifold. It produces more efficient estimates than single equation estimation and more powerful statistical tests of the estimated (fixed and random) parameters (Maas and Snijders 2003; Snijders and Bosker 1999). It allows for comparisons and joint significance tests of the fixed effects of the same explanatory on more than one response variables (Snijders and Bosker 1999: 200-201), here two or more fear of crime indicators. Additional merits of the method which are irrelevant here include "allow"ing "incomplete data without any problems" (Maas and Snijders 2003: 87) or additional computational cost on the assumption that "missing-ness" is random (Goldstein 1995) and predicting possible displacement or diffusion effects of each covariate on correlated responses in case of contrasting effects (Tseloni 2007).

Appendix B Table:
Effects of individual characteristics on victimisation risk[a] during the previous year via logit modelling

Intercept *(b_0)*	-1.99***
	Exp(b)
Age groups (55 years old or older)	
Age 15-24 years old	0.36**
Age 25-34 years old	0.35**
Age 35-44 years old	0.39**
Age 45-54 years old	0.54
Education (None or Primary education)	
Secondary education	2.16*
Tertiary education	2.30*
Own accommodation	1.48
Knowing a victim in previous year	2.24***
Total Deviance (d.f.=8)	21.31***

* 0.10 > p-value > 0.05; ** 0.05 > p-value > 0.01; *** 0.01 > p-value.

[a] The vast majority refers to crimes against property.

ENDNOTES

[1] Box and colleagues (1988) argue that victims living in deprived areas are unable to take effective self-protection measures against dangers and threats connected to their own areas of residence. Their constant contact with "signs of environmental disorder" (Box *et al*. 1988: 352) reminds them of their victimisation and the plausibility of its repetition.

[2] Ditton and Farrall (2000:*xxi*) revised the number of articles on the subject from 200 when reviewed by Chris Hale in 1992 (Hale 1996) "to over 800" (Farrall and Gadd 2002: 3).

[3] The substantive theme of this research is partly similar to Gray *et al.* (2006) who explored the relationship between direct victimisation and different fear of crime measures including frequency and intensity. Comparison of our research results with theirs especially with regards to the third research question above is given in the ending section of this paper.

[4] The term 'multilevel' is employed here as equivalent to 'hierarchical'. In reality though our model does not model hierarchical, i.e., nested data. The hierarchy in the model solely accounts for the multiple responses or dependent outcomes.

[5] The Appendix B Table presents results of logistic regression of victimisation in the previous year. Apart from 'maturity', namely 45 years old or older, the only significant covariate for victimisation risk is acquaintance with another victim (see Appendix B Table).

[6] They might be thought of as standardised covariances, $\hat{\sigma}_{si}, s \neq i$, bearing in mind that the three variances, $\hat{\sigma}^2{}_{u_i}$, for $s=i$, are restricted to one to comply with the binomial variance.

[7] The odds is the ratio of the probability of feeling unsafe over not feeling so or the probability of perceiving high likelihood of future victimisation over its complement.

[8] This has been calculated as 100x(0.38-1) from Table 4 below. It should be underlined that it implies changes in the odds rather than the probability itself. The latter is non-linearly related to each characteristic via the logistic regression model. Its calculation thus requires relevant information on all *P* covariates (Greene 1997).

[9] Each probability is calculated as $[1+exp\ (-\hat{\beta}_{0i})]^{-1}$, where $\hat{\beta}_{0i}$ =0.23, 1.30 and –0.24 from the respective Models 2 in Table 4.

[10] Being acquainted with a victim is significantly associated with such feelings only in Model 1 (58% odds increase).

[11] Arguably the expectation of victimisation may not entail anxiety or fearful experience but express an emotionless prediction. If so our very last conclusion is misleading.

[12] For instance, persons with more 'authoritarian' views on 'law and order' were more prone to perceive 'disorder' in their environment and more easily linked it to consensual and social cohesion problems as well as degradation of social structures and informal social control (Jackson 2004: 960).

[13] The effects of media on crime perceptions in Greece are addressed elsewhere (Zarafonitou and Mantoglou 2000, pp. 109, 112 and 113).