EXPLANATIONS FOR THE TENDENCY OF WOMEN AND ELDERLY PEOPLE TO FEEL UNSAFE WHILE OUT ALONE IN THEIR NEIGHBOURHOODS AT NIGHT

By

CRAIG VERNON MCMURTRY, B.S.S., B.A. HONS, M.A.

A DISSERTATION

Submitted to the School of Graduate Studies

in Partial Fulfilment of the Requirements for the Degree

Doctor of Philosophy

McMaster University

TO FEEL UNSAFE WHILE OUT ALONE AT NIGHT

ABSTRACT

It has been observed that women and elderly people in Britain, Canada, and the United States of America are more likely to feel unsafe while out alone in their neighbourhoods at night than men and younger people are. Explanations for this phenomenon are developed and tested in this dissertation. Some of the explanations are developed on the basis of three causes that scholars have postulated to account for people feeling unsafe while out alone in their neighbourhoods at night: fear of crime, perceived risks of criminal victimization, and perceived vulnerability to crime. Other explanations are developed on the basis of arguments put forward to account for fear of crime. According to these explanations, women and elderly people are especially likely to feel unsafe, either due to their intending to avoid criminal victimization, or due to their social positions, their exposure to incivility, and their disenchantment with their communities' enforcement of civility. Moment structure models are devised to express the various explanations for the tendency of women and elderly people to feel unsafe. The models are tested using data from the *British Crime Surveys* of 1984 and the *Fear of Crime in America Survey* of 1990. None of the explanations that are examined cover the data.

ACKNOWLEDGEMENTS

This dissertation reports on secondary analyses of a set of anonymous raw survey data entitled *British Crime Surveys, 1984*. Only I am responsible for the analyses, but I value the work done in putting the set of data together. That work was done by the Home Office Research and Planning Unit of the government of Her Majesty, the queen of England The set of data was made available by the Inter-University Consortium for Political and Social Research. My use of it was facilitated by three members of the staff at McMaster University: Ms. Brenda Nussey and Messrs. Anami Bhargava and Gerald Bierling.

Dr. Neil J. MacKinnon of the University of Guelph supplied an *INTERACT Dictionary* put together in Belfast, Northern Ireland. Homicide statistics for England and Wales in 1983 were provided by Dr. Martin Daly of McMaster University. Dr. Randy L. LaGrange of the University of North Carolina at Wilmington released some unpublished statistics from the *Fear of Crime in America Survey*.

Several people provided me with copies of unpublished papers. For this courtesy, I am grateful to Dr. Terry L. Baumer of the University of Indiana at Indianapolis, Dr. Kenneth F. Ferraro of Purdue University, Dr. Albert Hunter of Northwestern University, and Dr. Michael G. Maxfield of the University of Indiana at Bloomington. Mses. Caroline and Dianne McTaggart, Mr. John McTaggart, and my parents, Kathleen and Vernon, were thoughtful in passing along pertinent articles in the press.

My faculty advisor, the late Dr. Alfred A. Hunter of McMaster University discussed methodological, substantive, and stylistic problems with me. So did Dr. John Hagan of the University of Toronto, and Drs. Martin Daly, Margaret Denton, Graham Knight, and R. Jack Richardson, all of McMaster University. Dr. Kenneth A. Bollen of the University of North Carolina at Chapel Hill, and Drs. Gregory P. Brown and Rhonda L. Lenton, both of McMaster University, all answered methodological questions that I had. For the opportunity to talk over substantive issues, I am grateful to Dr. Charlene Miall of McMaster University; Mses. Brianna Carryl, Marta MacNeill, Caroline and Dianne McTaggart, and Geraldine Whitaker; and Messrs. John and Walter McTaggart, and John Whitaker.

Other acts of kindness toward me are harder to describe but were crucial to my work. Thus, I am much obliged to the following people at McMaster University: Ms. Deanna Goral, and Drs. David Counts, Margaret Denton, Graham Knight, Cyril Levitt, and Ralph Matthews. I am especially grateful to Dr. R. Jack Richardson for taking over as my faculty advisor, and as the chair of the examining committee after Dr. Alfred Hunter passed away. Of course, no one whom I think helped me is responsible for what I have chosen to write.

A Manual for Writers of Term Papers, Theses, and Dissertations says that one "may with propriety omit an expression of formal thanks for the routine help given by an advisor." Yet, Dr. Alfred Hunter gave me help that was enormous under circumstances that were not routine. This dissertation is therefore dedicated to Alf.

TABLE OF CONTENTS

LIST OF ILLUSTRATIONS

LIST OF TABLES

Table		Page

CHAPTER 1

PROBLEM

A man and a woman of my acquaintance are engaged to be married. She lives in the City of Hamilton, in Southern Ontario. He lives in the neighbouring Town of Dundas. Neither of them owns a car. There is a bus service between Hamilton and Dundas, though, and the woman sometimes uses it to visit the man. Occasionally, her visit will extend into the hours of darkness. Then, when the time comes for the woman to return home, her fiancé anticipates that she will feel unsafe walking the half-block from the bus stop in Hamilton to the door of her apartment all by herself. She confirms that she would feel unsafe, so he travels with her on the bus to Hamilton, and accompanies her to the door of her apartment. Then he catches a bus back to Dundas. To do so, he has to walk four blocks alone through Hamilton. Neither he nor she thinks that he endangers himself by doing so, however. Thus, it seems that while the woman feels unsafe walking alone through her neighbourhood after dark, the man does not feel that way. Yet, neither of them seems to perceive this state of affairs as odd.

Indeed, it is probably commonplace. Women and elderly people are more likely to feel unsafe while out alone in their neighbourhoods at night than men and younger people are. This phenomenon has been observed in Britain (Hough and Mayhew 1985, app. A, table K), Canada (Sacco and Johnson 1990, table 15), and the United States of America (Hindelang, Gottfredson, and Garofalo 1978, table 8-2).

The phenomenon cannot be explained by women and elderly people being more exposed to criminal victimization than men and younger people are. The likelihood of being a victim of crime is smaller for women and elderly people in Britain, Canada, and the United States than it is for their male, and younger adult compatriots (Hindelang 1976, table 5-5; U.S. Department of Justice 1972, table 22; U.S. Department of Justice 1973, table 25; Gottfredson 1984, 7; Sacco and Johnson 1990, table 1).

Several scholars assumed that the reason women and elderly people were especially likely to feel unsafe while out alone in their neighbourhoods at night was that women and the elderly were especially likely to be afraid of crime (cf. LaGrange and Ferraro 1989, 699-700). Randy L. LaGrange and Kenneth F. Ferraro have criticized that notion (LaGrange and Ferraro 1989, 699-700). Yet, no one has corroborated any alternative, scientific explanation for women and elderly people being especially likely to feel unsafe.

This dissertation tackles the problem of corroborating a scientific explanation for the phenomenon of women and elderly people being more likely to feel unsafe while out alone in their neighbourhoods at night than men and younger people. Several such explanations are developed and then tested for their correspondence with the facts.

The next chapter presents some evidence about how unsafe women and elderly people feel while out alone in their neighbourhoods after dark as compared with how unsafe men and younger adults feel. The succeeding chapter reviews what scholars have said about the phenomenon that this evidence documents.

CHAPTER 2

FACTS

There is ample evidence that, compared with men and younger adults, women and elderly people are both more likely to feel unsafe while out alone at night, and less likely to experience criminal victimization. In the following presentation of some of that evidence, the terms *men* and *women* are used to denote males and females of at least fifteen years of age. The term *elderly* is used to denote people older than sixty-five (cf. Brillon 1987, 6-7). Further, it is assumed that people feel unsafe while out alone in their neighbourhoods at night if they say that they do in response to a question with fixed alternate answers.

The Earliest Evidence

The earliest evidence that women and elderly people are more likely to feel unsafe than men and younger adults comes from a survey that was done in the United States in 1972. The respondents were the adult members of randomly-selected households in eight cities, those being Atlanta, Baltimore, Cleveland, Dallas, Denver, Newark, Portland in Oregon, and St. Louis (Hindelang, Gottfredson, and Garofalo 1978, 289).

Sixty percent of the women respondents did not feel safe out alone in their neighbourhoods at night, but only 27 percent of the men felt this way (Hindelang, Gottfredson, and Garofalo 1978, table 8-2). Sixty-two percent of adults aged over sixty-five years did not feel safe, compared with 42 percent of younger adults (Hindelang, Gottfredson, and Garofalo 1978, table 8-2). Women were 3 percent less likely to be victims of robberies, assaults, or personal larcenies, however, and adults aged over sixty-five were 5 percent less likely to be victims of these crimes than younger adults were (Hindelang 1976, table 5-5). Further, according to federal government records, the average annual rate of homicide victimization in the United States in 1971 and 1972 was four times lower for women over fifteen years of age than it was for their male counterparts (U.S. Department of Justice 1972, table 22; U.S. Department of Justice 1973, table 25; U.S. Department of Commerce 1973, table 3). For people aged over sixty-five, the homicide rate was two-and-a-half times lower than it was for people aged between fifteen and sixty-four years (U.S. Department of Justice 1972, table 22; U.S. Department of Justice 1973, table 25; U.S. Department of Commerce 1973, table 3).

Later Findings

The evidence from the United States in the early 1970s agrees with more recent findings from surveys of people in other countries. One such survey was of England and Wales in 1984. Another was of Canada in 1988.

The data from England and Wales (Principal Investigator, Home Office Research and Planning Unit 1987a) show 48 percent of the women surveyed felt at least a little bit unsafe when walking alone in their neighbourhoods after dark, compared with just 13 percent of the men. Forty-eight percent of respondents over sixty-five years of age felt unsafe, but only 28 percent of those under sixty-five did not feel safe. Yet, being a victim of an assault, robbery, or personal larceny was 2 percent more likely for men than it was for women. It was 8 percent more likely for a person younger than sixty-five than it was for anyone older. According to the records of the British home office (Martin Daly, telephone conversations, 8 October 1992 and 22 October 1992) and official estimates of the population (U.K. Central Statistical Office 1985, 470: 16), the rate of homicide victimization at the time of the survey was 1.3 times higher for men than it was for women. The rate among adults under sixty-five years of age was 1.04 times higher than it was among people who were older.

The Canadian survey data (Statistics Canada 1989) show that, whereas 12 percent of the male respondents would feel at least somewhat unsafe walking alone in their neighbourhoods at night, as many as 40 percent of the females would. While 24 percent of those younger than sixty-five said that they would feel unsafe, 41 percent of those who were older said that they would. Being subjected to an assault, robbery, or personal larceny was 2 percent more common among men than it was among women, though. Such an experience was also 9 percent more common among those under sixty-five years of age than it was among those who were older. Further, official homicide statistics (Richard Trudeau, Canadian Centre for Justice Statistics, letter, 12 November 1992) and population estimates (Sacco and Johnson 1990, table 1) indicate that, in the period covered by the survey, the rate of homicide victimization for males fifteen and older was 2.1 times higher than the rate for females. The same sources indicate that the rate for people between the ages of fifteen and sixty-four is 13.0 times higher than the rate for older adults.

CHAPTER 3

EXPLANATIONS

Scholars postulate three states of mind by which people may come to feel unsafe while out alone in their neighbourhoods at night: fear of crime, perceived risk of criminal victimization, and perceived vulnerability to crime. This chapter looks at how being especially liable to these states of mind may explain women and elderly people being especially likely to feel unsafe while out by themselves in their neighborhoods after dark.

Fear of Crime

The first time that survey respondents were asked whether they felt unsafe out alone at night was in 1966, when the National Opinion Research Center of the University of Chicago interviewed ten thousand adults throughout the United States (Ennis 1967, 1; National Opinion Research Center 1967, 3). In reporting on the findings, Philip H. Ennis took feeling unsafe to be an expression of fear of crime (Ennis 1967, 73-74). He used the term *fear of crime* to distinguish an emotional response to the prospect of personally being criminally victimized from a dispassionate assessment, either of personal risk, or of the threat crime presents to society (Ennis 1967, 74). Treating feelings of not being safe as expressions of fear of crime implies not only seeing fear of crime as a direct cause of not feeling safe, but also seeing other possible causes as unimportant by comparison.

Proponents of the idea that feelings of not being safe arise from fear of crime point out that if fear of crime refers to an emotional state, then feeling unsafe is such a state (Skogan and Maxfield 1981, 49). They also say that if fear of crime is a response to the prospect of personally being criminally victimized, then being out alone at night is a situation in which one's security from criminal victimization is salient (Clemente and Kleinman 1977, 525). Yet, these propositions do not justify thinking that fear of crime is the only important cause of feeling unsafe while out alone at night. To justify that notion, it is necessary to maintain that security from criminal victimization is the only concern that most people have when they go out unaccompanied after dark. Even scholars who believe that feeling unsafe is an expression of fear of crime acknowledge that this last proposition is not easy to accept (Garofalo 1979, 82). It could be corroborated, though, by showing that variations in how unsafe people feel correspond very closely with variations in the magnitude of their fear of crime.

Scholars disagree about how feeling unsafe while out alone at night is related to fear of crime. Ennis took feeling unsafe to be an expression of fear of crime-in-general. (Ennis 1967, 73-74), but Peter P. Yin believes that feeling unsafe is an expression of fears of only certain kinds of crimes (Yin 1980, 496-97). Yin argues that "fear of being raped or physically assaulted is qualitatively different from fear of purse snatching or of having one's garage pillaged" (Yin 1980, 496). Thus, he proposes a distinction between kinds of fears of crimes: fear of crimes against the person and fear of crimes against property (Yin 1980, 497). Yin says that it is fear of crimes against the person that is manifest in not feeling safe while out unaccompanied at night (Yin 1980, 496-97). Yin's (1980) distinction between fearing crimes against the person and fearing crimes against property may or may not correspond with the facts. Either way, he may still be correct in thinking, both that different kinds of fears of crimes exist, and that feeling unsafe is an expression of fears of only certain kinds of crimes.

If feeling unsafe while out alone at night arises from fear of crime, then the reason women and elderly people are especially likely to feel unsafe may be that they are especially afraid of crime. At least four explanations have been offered for why women and elderly people may be especially afraid of crime:

1. Fear of crime results from exposure to uncivil behaviour (Taylor and Hale 1986, 154). People infer a risk of experiencing criminally uncivil behaviour from their having been exposed to incivilities of a less serious nature (Ferraro, LaGrange, and Supancic 1992, 327). Exposure to incivility also creates doubts about the community's capacity for enforcing its standards of conduct, and such doubts lead to fear of crime (Lewis 1980, 59; Lewis and Salem 1981, 418; 1986, 99; Taylor and Hale 1986, 155). Women and elderly people experience uncivil behaviour more often than men and younger folks do, and are more frightened by it (cf. Maxfield 1987, 13, 15-19)
2. Underlying fear of criminal victimization is concern about personal safety (Sacco 1990, 489). Such concern is fostered in girls especially, to inhibit them from venturing outside the home (Sacco 1990, 499-500). Developing such an inhibition in girls is particularly important in cultures that set the workplace apart from the home

and deem the latter to be the proper place for a woman (Hagan, Simpson, and Gillis 1987, 791-93). All capitalist societies set places of work apart from places of residence (Marx 1976, 279), but only in those capitalist societies that incorporate patriarchy are women treated as though they should remain at their places of residence (Hagan, Simpson, and Gillis 1988, 302). In capitalist societies where patriarchy is becoming an anachronism, women may still be more inhibited from venturing outside the home than men, but, other things being equal, younger women should be less inhibited than older women should be (Sacco 1990, 502). Thus, if inhibitions against venturing outside the home do create a concern for personal safety that makes people afraid of criminal victimization, it is to be expected that women, and especially elderly women, will be fearful of becoming victims.

3. Fear of crime, like any other emotional state (Gerth and Mills 1964, 3, 45, 46, 79), is conditioned by the performance of the various roles one assumes in society (Garofalo 1987, 24-25, 37, 38). The parts that women and elderly people tend to play in the dramas of their communal lives (Goffman 1959, 16) are what make them susceptible to fear of crime.

4. Cognitive processes mediate between stimulus and response. Fear of crime is part of the cognitive process that intervenes between perceiving a possibility of criminal victimization and taking precautions to prevent that possibility from occurring (Skogan and Maxfield 1981, 257-62). Other things being equal, the possibility of criminal victimization is greater for a woman than it is for a man,

and greater for an elderly person than it is for someone younger (Skogan and Maxfield 1981, 69). This state of affairs frightens women and older adults into taking precautions, and taking precautions reduces their chances of ever actually being criminally victimized (Skogan and Maxfield 1981, 262).

Perceived Risk of Criminal Victimization

Ferraro and LaGrange dispute whether fear of crime is the only direct cause of feeling unsafe while out alone at night (Ferraro and LaGrange 1992, S234). They maintain that whether one feels unsafe is also directly determined by one's perceived risk of criminal victimization. Ferraro and LaGrange use the term *perceived risk of criminal victimization* to distinguish thoughtful responses to the threat of crime from the more visceral responses that *fear of crime* denotes (Ferraro and LaGrange 1987, 72). They also make a distinction between perceived risk of crimes against one's property and perceived risk of crimes against one's person (Ferraro and LaGrange 1992, S237-38).

Proponents of the view that fear of crime is part of a cognitive process have tried to disentangle the causes and effects of fear from the causes and effects of perceived risk. Erin Ashley Bannon, Mark Stafford, and Mark Warr all propose that perceived risk comes before fear in the sequence of cognition that leads to women and elderly people taking precautions against crime (Bannon 1988, 83, 88; Warr and Stafford 1983, 1035; Warr 1984, 683-84). Be that as it may, the reason women and elderly people tend to feel unsafe while out alone at night may be that they are both especially afraid of crime and especially likely to perceive themselves as at risk of criminal victimization.

Perceived Vulnerability to Crime

Terance D. Miethe and Gary R. Lee postulate perceived vulnerability to crime as a cause of not feeling safe while out alone at night (Miethe and Lee 1984, 398, 400, 403). Perceived vulnerability, like perceived risk, may be set apart from fear as a more thoughtful than visceral way of responding to a noxious object (cf. Miethe and Lee 1984, 399). Miethe and Lee distinguish perceived vulnerability to crime from perceived risk of criminal victimization, however (Miethe and Lee 1984, 400). *Perceived risk of victimization* is used to refer to one's assessed likelihood of being criminally victimized (Miethe and Lee 1984, 400). *Perceived vulnerability to crime* is used to denote both seeing oneself as unable to protect oneself from criminals, and seeing one's neighbourhood as crime-ridden (Miethe and Lee 1984, 400). Seeing oneself as unable to protect oneself from criminals may mean seeing oneself as unable to avoid either criminal victimization or suffering serious consequences as a result of being victimized (Sacco 1990, 492; Sacco and Glackman 1987, 100). Thus, *perceived vulnerability to crime* may be understood as covering three phenomena:

1. The perception of being particularly highly-exposed to the risk of criminal victimization due to one's neighbourhood being a place where crimes are especially likely to happen

2. The perception of being particularly highly-exposed to the risk of criminal victimization due to one's own inability to avoid being victimized
3. The perception of being liable to suffer serious consequences if criminally victimized

If Miethe and Lee (1984) are right in postulating perceived vulnerability to crime as a cause of feeling unsafe while out alone at night, then perceptions of being particularly highly-exposed to the risk of victimization may make people feel unsafe. Also, perceptions of being liable to suffer serious consequences if criminally victimized may make people feel unsafe when out by themselves after dark. Then, one reason women and elderly people are especially likely to feel unsafe may be that they are especially likely to see themselves as particularly highly-exposed to the risk of being victimized. Another reason may be they are especially likely to see themselves as liable to suffer serious consequences if they were to become crime victims.

In Miethe and Lee's opinion (Miethe and Lee 1984, 398, 400, 402-3), fear and perceived risk of criminal victimization affect how unsafe people feel only indirectly, as a consequence of increasing their perceived vulnerability to crime. Miethe and Lee (1984) make no arguments to support this opinion of theirs.

While Miethe and Lee believe that one's perceived risk of being criminally victimized affects one's perceived vulnerability to crime (Miethe and Lee 1984, 408), Bannon believes that one's perceived vulnerability to crime affects one's perceived risk of being victimized (Bannon 1988, 83, 88).

Perceived vulnerability covers the perception of being particularly highly-exposed to the risk of victimization. That should vary from the perceived risk of being the victim of a crime by a magnitude that depends on the subjective probability of crimes occurring. If perceived risk affects perceived vulnerability, then the sense of being highly-exposed to the risk of criminal victimization should vary as some function of the ratio of the perceived risk of being victimized to the perceived likelihood of crimes being perpetrated. If perceived vulnerability affects perceived risk, then perceived risk should be some function of the product of the sense of being highly-exposed to the risk of being victimized and the perceived likelihood of crimes occurring. Which of these two possibilities corresponds more closely with the facts is not an issue here. Yet, a method for finding an answer is available. Generally, if the direction of causality is from the variable x to the variable y, then using past values of x and y should give better predictions of y than using only past values of y should give (Bollen 1989, 64).

Perceived vulnerability to crime covers the perception of being liable to suffer serious consequences if criminally victimized, and Vincent F. Sacco (1990, 492) suggests that having this perception of themselves makes people more averse to the prospect of becoming crime victims (cf. Stinchcombe and others 1980, 44-45). Warr postulates that aversion to the prospect of becoming crime victims varies between the sexes and across age categories (Warr 1987, 31). He has a way of establishing whether such variations exist (Warr 1985, 243). For any two groups, his method involves demonstrating that any given increase in the perceived risk of victimization is associated with different increases in the magnitude of some negative affective response.

Reflection

Ennis (1967) postulated only fear of crime as a direct cause of feeling unsafe while out alone at night, and did not consider perceived risk of criminal victimization and perceived vulnerability as other possible direct causes of the phenomenon. Ferraro and LaGrange (1992) take both fear of crime and perceived risk of criminal victimization to be direct causes of feeling unsafe, but they do not consider whether perceived vulnerability to crime might be another. Miethe and Lee (1984) believe that perceived vulnerability to crime is a direct cause of not feeling safe, but, for no apparent reason, they do not believe that fear of crime and perceived risk of victimization directly cause people to feel unsafe. Yet, fear of crime, perceived risk of criminal victimization, and perceived vulnerability to crime may all be direct causes of feeling unsafe while out alone at night. If they are, then perhaps women and elderly people are especially likely to feel unsafe because they are especially likely to be afraid of crime, and to perceive themselves as at risk of criminal victimization and vulnerable to crime.

CHAPTER 4

PUBLISHED FINDINGS

Fear of crime, perceived risk of victimization, and perceived vulnerability to crime are three states of mind that scholars have postulated as causes for feeling unsafe while out alone at night. The previous chapter presented several conceptions of how being especially liable to be of these states of mind may explain the phenomenon of women and elderly people being especially likely to feel insecure while out alone at night. This chapter reviews published findings pertinent to determining how closely these conceptions correspond with the facts.

Findings Concerning Fear of Crime

Fear of Crime as a Direct Cause of Not Feeling Unsafe While Out Alone at Night

If fear of crime is a direct cause of not feeling safe while out alone at night, then, other things being equal, fears of crimes should be associated with not feeling safe (cf. Bollen 1989, 52). Whether such associations exist is revealed by findings from the 1990 *Fear of Crime in America Survey*, reported by Ferraro and LaGrange (1992, table 2).

In this survey, the 95 percent of adults in the United States that live in households with telephones were taken to represent the general adult population of the country (Ferraro, LaGrange, and Supancic 1992, 316; cf. Babbie 1983, 146-47). A multistage cluster sample yielded 1,101 respondents for a response rate of 61 percent (Ferraro and LaGrange 1992, S235-36). The respondents were interviewed by telephone, and were asked approximately seventy questions in about twelve minutes (Ferraro and LaGrange 1992, S236).

Among the questions that the respondents were asked was whether they felt "very safe," "somewhat safe," "somewhat unsafe," or "very unsafe" while out alone in their neighbourhoods during the night (Ferraro and LaGrange 1992, table 1). They were also presented with descriptions of various criminal victimizations (Ferraro and LaGrange 1992, table 1):

1. Being cheated, conned, or swindled out of their money
2. Having someone break into their homes while they were away
3. Having someone break-into their homes while they were there
4. Being raped or sexually assaulted
5. Being murdered
6. Being attacked by someone with a weapon
7. Having their cars stolen
8. Being robbed or mugged on the street
9. Having their property damaged by vandals

The respondents were asked to rate their fears of these experiences on a ten-point scale (Ferraro and LaGrange 1992, table 1). A rating of one on the scale was to indicate that they were not at all afraid of being subjected to the crime in question, and a rating of ten was to indicate that they were very afraid (Ferraro and LaGrange 1992, table 1).

Ferraro and LaGrange arbitrarily assigned the real number values of one through four to the response categories of the question about feelings of insecurity while out alone at night (cf. Ferraro and LaGrange 1992, S236-37). Then they estimated the linear associations between the set of response categories and the ratings of fear of the various criminal victimization scenarios. The results are in table 4-1.

Ferraro and LaGrange say that all of the estimates are statistically significant at the .01 level of the probability of error in affirming a relationship (Ferraro and LaGrange 1992, table 2). The average estimate is .31. Above-average estimates are for the associations with fears of break-ins at home, either while one is away or while one is at home, and with fears of robbery or mugging. Below-average estimates are for the associations with fears of murder, car theft, and fraud.

Unfortunately, Ferraro and LaGrange (1992) provide no information on how well a linear model of association fits the relationship between feeling unsafe while out alone at night and the various fears of crime. So, it remains to be seen whether the estimates of the linear associations among these variables do not underestimate the overall associations.

Nevertheless, Ferraro and LaGrange's (1992) findings are consistent with the possibility that fears of crimes are associated with not feeling safe while out alone at night. That possibility is in turn consistent with the proposition that fear of crime is a direct cause of feeling unsafe.

Table 4-1. Linear Associations between Feeling Unsafe Out Alone during the Night and Ratings of Fear of Various Crimes, Adults in the United States in 1990 (N = 1,089), Pearson Correlation Coefficients, List-wise Deletion

Crime	Linear Association with Feeling Unsafe
Fraud	.21
Break In at Home While One Is Away	.38
Break In at Home While One Is There	.35
Rape or Sexual Assault	.31
Murder	.28
Assault with a Weapon	.31
Car Theft	.29
Robbery or Mugging	.38
Vandalism	.31

Source: Ferraro and LaGrange (1992, table 2).

Feeling Unsafe While Out Alone at Night as an Expression of Fear of Crime

Gary R. Lee (1982) reports research findings that have a bearing on whether Ennis (1967) was right in taking feeling unsafe while out alone after dark to be an expression of fear of crime-in-general. Lee defined the population of his research as the residents of Washington State aged fifty-five and over (Lee 1982, 657). A cluster sample of 4,922 individuals yielded 4,062 for whom there was enough information to include in the analysis (Lee 1982, 658). These individuals responded by mail to a questionnaire that included seven survey items designed to tap general anxiety about criminal victimization, and one item asking them whether they felt unsafe while out alone at night (Lee 1982, 657, 658, 659).

Of the seven items intended to gauge general anxiety about criminal victimization, six invited the respondents to strongly agree, to agree, to disagree, or to strongly disagree with a statement (Lee 1982, 659). The statements were as follows (Lee 1982, 659):

1. When I am away from home, I worry about the safety of my property
2. I worry a great deal about my personal safety from crime and criminals
3. I worry a great deal about the safety of my loved ones from crime and criminals
4. I worry a great deal about the safety of my property from crime and criminals

5. Even in my own home, I'm not safe from people who want to take what I have
6. There is reason to be afraid of becoming a victim of crime in my community

The seventh item that was to tap general anxiety about crime asked respondents whether fear of crime had been a problem for them in the past year (Lee 1982, 659). Three alternatives were provided for answers. The respondents could say that fear of crime had been no problem, a problem, or a serious problem (Lee 1982, 659).

To establish whether the respondents felt unsafe while out by themselves in their neighbourhoods after dark, Lee had them say whether there was any area within about a mile of their homes where they would be afraid to walk alone at night (Lee 1982, 658). The replies that the respondents could choose from were that such a place existed, that no such place existed, or that they were uncertain whether any such place existed.

Lee did an exploratory factor analysis of the responses to the eight items using the principal axis method of factoring combined with the varimax method of rotating factors (Lee 1982, 659, 659 n. 3). The loading of the item dealing with feeling unsafe while out alone after dark on the factor that could account for the most variance in the responses to the eight survey items was .103 (Lee 1982, 659, n. 3). Therefore, only $.103^2$, or 1 percent of the variance in the responses to the item can be described as a linear function of values on that factor. This finding may be taken to mean that the factor is not an especially important determinant of responses to the item (cf. Lewis-Beck 1980, 63). If this interpretation is granted, and if the factor is interpreted as fear of crime-in-general, then the results of Lee's (1982) analysis are not consistent with fear of crime-in-general being the primary cause of variation in feelings of not being safe. Yet, that is what one would anticipate finding if feeling unsafe while out alone at night expressed fear of crime-in-general. Therefore, Lee's (1982) results are not consistent with the idea that feeling unsafe while out alone at night is an expression of fear of crime-in-general.

Lee's (1982) results should be treated with caution, however. In the first place, the population of Lee's (1982) research was defined so that his findings only apply to adults in a specific age category: those aged fifty-five years and over. Then, in the second place, the value that Lee (1982) obtained for the loading of any of the eight survey items on any of the factors would have depended on several arbitrary specifications necessary to complete an exploratory factor analysis (cf. Kim and Mueller 1978a, 38-43).

Different Kinds of Fears of Crimes

Yin's (1980) idea that feeling insecure while out alone in one's neighbourhood at night is an expression of fear of only certain types of crimes presupposes a distinction between different kinds of fears of crimes. Several scholars say that there is evidence showing that different kinds of fears of crimes exist. Some of these scholars take the domain of fears of crimes to include any mode of response to crime: behavioral, ideational, or emotional (Baumer 1979, 6; Baumer and Rosenbaum 1982, 5; Shiang-Jeou 1989, 42; Tritt 1986). Yin (1982), on the other hand, follows Ennis in restricting the concept to people's emotional responses (Ennis 1967, 73-74). The evidence that various modes of response to crime exist has very little bearing on the argument Yin makes that there are qualitatively different responses in the emotional mode (Yin 1982, 496-97). The only bearing this evidence has is in showing, on balance, that emotional reactions to crime may be distinct from ideational and behavioral responses (Baumer 1979, 9-11; Baumer and Rosenbaum 1982, 36-37; Shiang-Jeou 1989, 63-64). That is how the reported solutions to several exploratory factor analysis problems can be interpreted, at any rate.

Other findings are more pertinent to the idea that different kinds of emotional reactions to crimes exist. These findings derive from analyses of data from surveys of Atlanta and of the whole United States.

The Principal Components of Fears of Crimes in Atlanta

Ralph B. Taylor and Margaret Hale seek to corroborate the existence of "conceptually distinct" emotional responses to crime for the people living in six neighbourhoods of Atlanta in 1980 (1986, 164, 168). These neighbourhoods had been selected for a study of how some urban communities manage to maintain low crime rates in spite of their proximity to crime-ridden areas (Greenberg 1983a, i). Three pairs of adjacent neighbourhoods were chosen, those in each pair having similar economic and racial compositions, but markedly different levels of serious crime

(Greenberg 1983a, iii). A single-stage stratified random sample of 801 residences was drawn from 132 strata divided in terms of location and housing density (Greenberg 1983a, ii). One person in each residence was asked to respond to a survey questionnaire, and 523 agreed to do so (Greenberg 1983a, iv, vii).

Taylor and Hale wanted to examine variations among the individual's responses independently of the effects of differences among the neighbourhoods (Taylor and Hale 1986, 158). To this end, they arbitrarily assigned successive whole numbers to the ordered response categories of the survey items, and calculated deviation scores relative to the corresponding neighbourhood means to stand for the individual's responses (Taylor and Hale 1986, 165).

The method of principal components analysis was applied to the responses to eight of the survey items (Taylor and Hale 1986, 168). The first five of these items were requests that the respondents say whether they were very worried, somewhat worried, just a little worried, or not at all worried about a particular criminal victimization scenario (Greenberg 1983a, variable references 467-71). The scenarios were these:

1. Having their homes broken into or entered illegally when none of the members of their households were there (Greenberg 1983a, variable reference 467)
2. Being held up on the street, threatened, or beaten up within two blocks of their homes (Greenberg 1983a, variable reference 468)
3. Being held up on the street, threatened, or beaten up, or anything of that sort within the rest of the neighbourhoods (Greenberg 1983a variable reference, 469)

4. Other members of their households being held up on the street, threatened, or beaten up, or anything of that sort within two blocks of their homes (Greenberg 1983a, variable reference 470)
5. Other members of their households being held up on the street, threatened, or beaten up, or anything of that sort within the rest of their neighbourhoods (Greenberg 1983a, variable reference 471)

The other three items invited the respondents to say whether a particular statement that "people have made about crime" was mostly true or mostly false in the respondents' own cases (Greenberg 1983a, variable references 457-58, 461). The statements were as follows (Greenberg 1983a, variable references 457-58, 461):

1. I'm often a little worried about being the victim of a crime in my neighbourhood
2. I would probably be afraid if a stranger stopped me at night in my neighbourhood to ask for directions
3. When I hear footsteps behind me at night in my neighbourhood, it makes me feel uneasy

Having chosen to retain only those components with eigenvalues greater than one, Taylor and Hale settled on extracting two (Taylor and Hale 1986, 168-69). They do not report the proportion of variance covered by these two components, nor whether the components were rotated prior to interpretation. Using the computer program SPSS/PC+ Version 4.0 to analyze the same data (SPSS/PC+ Version 4.0), I found that rotating the components to the varimax criterion would produce results like those

Taylor and Hale report (Taylor and Hale 1986, 169), but that rotation to the quartimax criterion would not. Rotated to the varimax criterion, the components covered 64.5 percent of the total variance in responses to the eight survey items. The correlation matrix analyzed is in table 4-2, and the component loadings for the varimax solution are in table 4-3.

Taylor and Hale note that responses to the items concerning worry about burglary and mugging have considerable loadings on the first component, while those concerning disturbing experiences while out alone at night have considerable loadings on the second (Taylor and Hale 1986, 169). They say that the first component represents "a less immediate, less visceral aspect of the fear response," while the second component "captures a more aroused and intense aspect" (Taylor and Hale 1986, 169). Taylor and Hale conclude that they "have been able to identify two independent dimensions of fear of crime" (Taylor and Hale 1986, 169, 186).

Their analysis is flawed, however. The method of principal components analysis is not suitable for Taylor and Hale's (1986, 168) purpose of establishing the existence of "conceptually distinct" states of affairs. Principal components are linearly-independent weighted sums of some observed variables, chosen so that the variance in some of the combinations may cover more of the total variance in the observed variables than any one of those variables covers (Harmon 1976, 134, McDonald 1985, 63). So, principal components, like concepts, may provide an economical way of describing of a collection of facts (Wilkinson 1990b, 70-71). However, since principal components are combinations of the observed variables, they are a posteriori, unlike concepts, which are a priori (cf. Kim and Mueller 1978b, 19-21). Hence, identifying the various

Table 4-2. Zero-order Correlations for Fear of Crime Items with Variances in Main Diagonal, Sample of Individuals in Six Neighbourhoods of Atlanta, (N = 512), Pearson Coefficients of Correlation, Listwise Deletion

	Worry about Break-ins to Unoccupied Home	Worry about Robbery or Assault within Two Blocks	Worry about Robbery or Assault within Rest of Neighbourhood
Worry about Break-ins to Unoccupied Home	0.23		
Worry about Robbery or Assault within Two Blocks	.32	0.40	
Worry about Robbery or Assault within Rest of Neighbourhood	.25	- .59	0.38

Table 4-2. *Continued.*

	Worry about Break-ins to Unoccupied Home	Worry about Robbery or Assault within Two Blocks	Worry about Robbery or Assault within Rest of Neighbourhood
Worry about Assault or Robbery of Others in Household within Two Blocks	- .35	- .23	- .23
Worry about Assault or Robbery of Others in Household within Rest of Neighbourhood	- .40	- .37	- .30

Table 4-2. *Continued.*

	Worry about Break-ins to Unoccupied Home	Worry about Robbery or Assault within Two Blocks	Worry about Robbery or Assault within Rest of Neighbourhood
Worry about Being the Victim of a Crime in the Neighbourhood	- .31	- .33	- .32
Would Be Afraid If a Stranger Asked for Directions	- .30	- .22	- .20
Hearing Footsteps Makes Me Uneasy	- .27	- .23	- .21

Table 4-2. *Continued.*

	Worry about Assault or Robbery of Others in Household within Two Blocks	Worry about Assault or Robbery of Others in Household within Rest of Neighbourhood
Worry about Assault or Robbery of Others in Household within Two Blocks	1.05	
Worry about Assault or Robbery of Others in Household within Rest of Neighbourhood	.55	1.14
Worry about Being the Victim of a Crime in the Neighbourhood	.51	.74

Table 4-2. *Continued.*

	Worry about Assault or Robbery of Others in Household within Two Blocks	Worry about Assault or Robbery of Others in Household within Rest of Neighbourhood
Would Be Afraid If a Stranger Asked for Directions	.48	.57
Hearing Footsteps Makes Me Uneasy	.47	.46

Table 4-2. *Continued.*

	Worry about Being the Victim of a Crime in the Neighbourhood	Would Be Afraid If a Stranger Asked for Directions	Hearing Footsteps Makes Me Uneasy
Worry about Being the Victim of a Crime in the Neighbourhood	1.21		
Would Be Afraid If a Stranger Asked for Directions	.52	1.32	
Hearing Footsteps Makes Me Uneasy	.58	.78	1.32

Source: Calculated from the *Characteristics of High and Low Crime Neighbourhoods in Atlanta, 1980* survey data (Greenberg 1983b).

Table 4-3. Component Loadings for Fear of Crime Items, Sample of Individuals in Six Neighbourhoods of Atlanta in 1980 (N = 512), Varimax Solution from Pearson Correlation Coefficients, Listwise Deletion

	Component 1	Component 2
Worry about Break-ins to Unoccupied Home	-.378	.448
Worry about Robbery or Assault within Two Blocks	-.136	.863
Worry about Robbery or Assault within Rest of Neighbourhood	-.104	.849
Worry about Assault or Robbery of Others in Household within Two Blocks	.703	-.195
Worry about Assault or Robbery of Others in Household within Rest of Neighbourhood	.747	-.347

Table 4-3. *Continued.*

	Component 1	Component 2
Worry about Being the Victim of a Crime in the Neighbourhood	.763	-.304
Would Be Afraid If a Stranger Asked for Directions	.854	-.057
Hearing Footsteps Makes Me Uneasy	.840	-.054

principal components of some observed variables contributes nothing to Taylor and Hale's (1986, 168) purpose of substantiating distinctions among concepts.

Furthermore, principal components are linearly independent of each other, and it may be difficult to conceptualize the facts Taylor and Hale (1986, 168-69) discuss in terms of linearly independent dimensions. Thus, although they say the principal components correspond to "independent dimensions of fear" (Taylor and Hale 1986, 169, 186), Taylor and Hale (1986, 169, 186) describe these dimensions as being at least monotonically interdependent. That is surely what is conveyed by their statement that the one dimension covers a "*less* visceral aspect" of fear while the other covers "a *more* aroused and intense aspect" (Taylor and Hale 1986, 169, emphasis added).

Different Kinds of Fears of Crimes in the United States

Another attempt at establishing the existence of different kinds of fears of crimes is reported by Ferraro and LaGrange (Ferraro and LaGrange 1992, S238-39). They sought to determine whether Yin's distinction between fearing crimes against the person and fearing crimes against property corresponds with any existing state of affairs (Ferraro and LaGrange 1992, S238; Yin 1980, 497). Ferraro and LaGrange devised a confirmatory factor analysis model to express that distinction and then tested the model using data from the *Fear of Crime in America Survey* of 1990 (Ferraro and LaGrange 1992, S235, S238).

The model that Ferraro and LaGrange devised represented ratings of fears of crimes presumably committed against the person and ratings of fears of crimes presumably committed against property as not being directly affected by the same underlying variables (cf. Ferraro and LaGrange 1992, table 5). The acts that Ferraro and LaGrange presumed to be crimes committed against the person were the following (Ferraro and LaGrange 1992, tables 1 and 5):

1. Murder
2. Rape or sexual assault
3. Breaking into a person's home while the person is there
4. Attacking someone with a weapon

Those they presumed to be crimes committed against property were these (Ferraro and LaGrange 1992, tables 1 and 5):

1. Breaking into a person's home while the person is away
2. Stealing someone's car
3. Damaging another person's property
4. Cheating, conning, or swindling someone out of their money

The act of robbing or mugging someone was presumed to be a crime committed both against the person and against property (Ferraro and LaGrange 1992, S238). The confirmatory factor analysis model accordingly represented ratings of fear of this crime as being directly affected by both the factor underlying fears of crimes against the person and the factor underlying fears of crimes against property (Ferraro and LaGrange 1992, S238).

Respondents to the *Fear of Crime in America Survey* of 1990 were asked to assign ratings out of ten to their fears of being subjected to the nine crimes that Ferraro and LaGrange's model covers (Ferraro and LaGrange 1992, table 1). To determine whether their model agreed with the findings of the survey, Ferraro and LaGrange used a test based on a certain transformation of the maximum likelihood discrepancy function for confirmatory factor analysis models (Ferraro and LaGrange 1992, S238; Bollen 1989, 265; Browne 1982, 81). The transformation is known to be distributed as a chi-square variate under specifiable conditions that include the observable associations implied by the model being equal in strength to the corresponding associations found in the relevant population (Bollen 1989, 265; Browne 1982, 80-89). Ferraro and LaGrange report that applying the transformation to the maximum likelihood discrepancy function for their model yielded a value of 18.79 with twelve degrees of freedom (Ferraro and LaGrange 1992, table 5). In the distribution of a chi-square variate with as many degrees of freedom, this value has a probability of .094 (SYSTAT for Windows Version 5, distribution functions). Ferraro and LaGrange conclude that their model corresponds with the findings of the 1990 *Fear of Crime in America Survey* (Ferraro and LaGrange 1992, S238). This conclusion might have been used to justify distinguishing between different kinds of fears of crimes if there were not two defects in Ferraro and LaGrange's (1992) work.

One defect is in presuming that someone breaking into a person's home while the person is there is an offense against the person and not an offense against the person's rights of property. A person's home may be broken into while the person is there without her or him necessarily being subjected to an aggressive confrontation with the intruder. If that were to happen, then there would be no offense committed against the person, but only an offense against her or his rights of property (Hindelang 1976, 267). Thus, it may be more realistic to assume that someone breaking into a person's home while the person is there is an offense both against the person and against the person's rights of property.

A further defect in Ferraro and LaGrange's (1992) work is that the result they report for their test of whether their model agreed with the survey data cannot be replicated. Replicating this result is made difficult by Ferraro and LaGrange's (1992) failure to fully describe their model. The model allowed for errors in the use of ratings of fear of various crimes to measure fears of offenses against the person and fears of offenses against property (cf. Ferraro and LaGrange 1992, S239). Ferraro and LaGrange say that the model also allowed for associations between thirteen pairs of such errors (Ferraro and LaGrange 1992, S239). Yet, since Ferraro and LaGrange (1992) never identify those thirteen pairs of errors, one cannot know exactly what their model comprised, and that makes replicating the result of their test of the model a difficult task to accomplish. It can be done, though, by applying the optional automatic model modification routine of the DOS-LISREL 7.20 (DOS-LISREL Version 7.20) computer program to the various details that Ferraro and LaGrange (1992) provide concerning their model. The routine can identify those associations among pairs of errors of measurement that the model would have to accommodate in order to fit the data as well as possible. Allowing for those associations should produce a model that corresponds with the findings of the 1990 *Fear of Crime in America Survey* at least as closely as Ferraro and LaGrange (1992) claim that their model did, if the result of their test of the model is genuine. I used the DOS-LISREL 7.20 (DOS-LISREL Version 7.20) command file in figure 4-1 to apply the automatic model modification routine to the details that Ferraro and LaGrange (1992) provide about their model. The model that I obtained based on the results did not fit the data from the 1990 *Fear of Crime in America Survey* as well as Ferraro and LaGrange (1992) say that their model did. When I applied the same transformation to the maximum likelihood discrepancy function for my model that Ferraro and LaGrange (1992) applied to the corresponding statistic for their model, I obtained a value of 34.88 with sixteen degrees of freedom. This value has a probability of .004 in the distribution of chi-square with sixteen degrees of freedom (DOS-LISREL Version 7.20,

```
TI  MODIFICATION OF FERRARO AND LAGRANGE'S MODEL: FEAR
DA NG=1 NI=9 NO=1081 MA=KM
LA
X5 X6 X1 X2 X3 X4 X7 X8 X9  /
KM
1.0
.48 1.0
.42 .67 1.0
.36 .48 .69 1.0
.42 .47 .69 .72 1.0
.41 .53 .68 .67 .81 1.0
.42 .49 .36 .30 .37 .47 1.0
.46 .52 .55 .59 .64 .72 .55 1.0
.40 .49 .38 .34 .37 .44 .48 .53 1.0
SE
X1 X2 X3 X4 X5 X6 X7 X8 X9  /
MO NX=9 NK=2 LX=FU,FI PH=ST TD=SY,FI
FR LX(1,1) LX(2,1) LX(3,1) LX(4,1)
FR LX(5,2) LX(6,2) LX(7,2) LX(8,1) LX(8,2) LX(9,2)
FR TD(1,1) TD(2,2) TD(3,3) TD(4,4) TD(5,5)
FR TD(6,6) TD(7,7) TD(8,8) TD(9,9)
NF LX(1) - LX(18)
NF PH(2)
OU MI AM
```

Fig. 4-1. DOS-LISREL 7.20 command file (DOS-LISREL Version 7.20). *NO* is the number of respondents to the 1990 *Fear of Crime in America Survey* for whom information was available, according to Ferraro and LaGrange (1992, table 7). *X1* through *X9* are ratings of fear of various criminal victimizations: having a break-in at home while one is there, being raped, being murdered, being attacked with a weapon, being cheated, having a break-in at home while one is away, having one's car stolen, being robbed or mugged, and having one's property vandalised.

measures of model fit). That probability is smaller than the probability of the result reported by Ferraro and LaGrange (1992). One can infer that the result that Ferraro and LaGrange (1992) report for their test of the model that they devised is spurious.

Both Taylor and Hale (1986) and Ferraro and LaGrange (1992) claim to have corroborated the existence of different kinds of fears of crimes. Yet, there are critical flaws in the researches on which these claims are based.

Women and Elderly People Being Especially Afraid of Crime

Findings have been published that are pertinent to deciding whether women and elderly people are especially afraid of crime. The findings in question come from a survey of residents of Seattle, WA, in 1981, and from the *Fear of Crime in America Survey* of 1990.

Fears of Crimes of Women and Elderly People in Seattle

Warr conducted the survey of Seattle by mail (Warr 1984, 684). He chose a sample of five hundred of the city's residents by the method of simple random sampling from a telephone directory that had just been published (Warr 1984, 686). Three hundred and thirty-nine people returned usable responses to the survey questionnaire after two follow-up mailings (Warr 1984, 686).

Warr says that he elected to contact his chosen sample by mail rather than in person or by proxy because potential respondents may refuse to answer their doors due to fear of victimization (Warr 1984, 684). He does not mention whether, in choosing his sample from a telephone directory, he considered that, although about 90 percent of households in the United States have telephones (Tuchfarber and others 1976, 210), many telephone subscribers are not listed in any directory (Evans and Leger 1979, 178).

The survey questionnaire included items asking respondents to show how afraid they were of various incidents of criminal victimization by circling numbers between zero and ten beside the name of each crime (Warr 1984, 686). Circles around ten were to be used to indicate that they were very afraid of the incident in question (Warr 1984, 686). Thirteen incidents of criminal victimization were covered by the survey items (Warr 1984, table 1):

1. Being threatened with a knife, club, or gun
2. Receiving an obscene call
3. Having something taken from one by force
4. Being cheated or conned out of one's money
5. Being beaten up by a stranger
6. Being murdered
7. Being raped
8. Having someone break into one's home while one is away
9. Being beaten up by an acquaintance
10 Having one's car stolen

11 Being hit by a drunken driver while driving one's car

12 Having a group of juveniles disturb the peace near one's home

13 Having someone break into one's home while one is there

Only women were asked to indicate how afraid they were of being raped.

Warr found that the means of the circled numbers indicating how afraid the respondents were of these incidents were higher for women than they are for men for all of the twelve incidents to which both men and women responded (Warr 1984, table 1). However, for several incidents, the means of the numbers indicating how afraid the respondents were lower for respondents of sixty-six years of age and older, than they were for respondents between nineteen and sixty-five (Warr 1984, table 1). The several incidents were those of being conned, being murdered, being raped, being beaten up by an acquaintance, and having one's car stolen.

Fears of Crimes of Elderly People in the Whole United States

Ferraro and LaGrange discuss the findings of the 1990 *Fear of Crime in America Survey* (Ferraro and LaGrange 1992). Respondents to the survey were asked to rate their fear of various criminal victimization incidents on a scale from one to ten (Ferraro and LaGrange 1992, table 1). The incidents were these: being murdered, being robbed, being sexually assaulted, being attacked with a weapon, having a break-in at home while there and while away, having a car stolen, being conned, and having property vandalized. For not one of these nine incidents was the mean rating of fear higher for respondents over sixty-five years of age than it was for respondents between eighteen and sixty-four years of age (Ferraro and LaGrange 1992, table 7).

Discussion

From the findings of Warr's (1984) survey of Seattle, it appears that women are especially afraid of several types of criminal victimization. It may be because they are especially afraid of these, and possibly other types of criminal victimization, that women are especially likely to feel unsafe while out alone in their neighbourhoods at night.

The findings of both the Seattle survey and the 1990 *Fear of Crime in America Survey* show that elderly people do not seem to be especially afraid of any type of criminal victimization (cf. LaGrange and Ferraro 1989, 697–8; Jeffords 1983, 103–105, 109). Then, it cannot be because they are especially afraid of being subjected to some type of crime that elderly people are more likely to feel unsafe while out alone in their neighbourhoods at night than younger adults are.

This conclusion contradicts both Ennis' (1967) view that to feel unsafe is an expression of fear of crime-in-general, and Yin's (1980) alternative view that to feel unsafe is an expression of fear of only certain types of crimes. These views imply that the primary cause of people feeling unsafe is that they are afraid, if not of crime-in-general, then of certain types of crimes at least. Yet, it is not because of being especially afraid of some type of crime that elderly people are especially likely to feel unsafe So, it cannot be true without qualification that fear of crime is the primary cause of people not feeling safe.

Findings Concerning Perceived Risks of Criminal Victimization

Perceived Risk of Criminal Victimization as a Direct Cause of Not Feeling Unsafe While Out Alone at Night

Ferraro and LaGrange (1992) maintain that whether one feels unsafe is directly determined by perceived risks of criminal victimization. If they are right, then, other things being equal, perceived risks of criminal victimization should be associated with not feeling safe (cf. Bollen 1989, 52). The existence of such associations is corroborated by the results of Ferraro and LaGrange's (1992) analysis of findings from the 1990 *Fear of Crime in America Survey*.

Respondents to this survey were asked to rate the chances out of ten that various criminal victimizations would happen to them during the next year. Ferraro and LaGrange estimated the linear associations between the ratings the respondents gave for the various criminal victimizations and how unsafe they said they felt while out alone in their neighbourhoods at night (Ferraro and LaGrange 1992, S236). To make the estimates, Ferraro and LaGrange arbitrarily assigned the real number values of one through four to the four response categories of the question in the survey that dealt with feelings of insecurity while out alone at night (cf. Ferraro and LaGrange 1992, S236-37).

The estimates that Ferraro and LaGrange made are reproduced in table 4-4 (Ferraro and LaGrange 1992, table 2). The average estimate is .37--slightly higher than the average estimate of the linear associations between fears of crimes and not feeling safe. According to Ferraro and LaGrange, all of the estimates in table 4-4 are statistically significant at the .01 level of the probability of mistakenly affirming a relationship (Ferraro and LaGrange 1992, table 2). That finding is consistent with perceived risks of becoming victims of the various crimes being associated with feeling unsafe while out alone at night. The existence of associations between perceived risks of becoming victims of the various crimes and feeling unsafe while out alone at night is in turn consistent with Ferraro and LaGrange's (1992) proposition that whether people feel unsafe is directly affected by their perceived risks of criminal victimization.

Different Kinds of Perceived Risks of Criminal Victimization

Ferraro and LaGrange present evidence to show that their distinction between perceiving a risk of crimes against one's property and perceiving a risk of crimes against one's person corresponds with the facts (Ferraro and LaGrange 1992, S238-39). Their evidence is dubious, though.

A confirmatory factor analysis model was devised to express the distinction between perceived risks of offenses against property and perceived risks of offenses against the person. Then a test was done to see whether the model agreed with the findings of the 1990 *Fear of Crime in America Survey*. The test was based on the transformation of the

Table 4-4. Linear Associations between Feeling Unsafe Out Alone During the Night and Ratings of Chances of Various Crimes, Adults in the United States in 1990 (N = 1,089), Pearson Correlation Coefficients, List-wise Deletion

Crime	Linear Association with Feeling Unsafe
Break In at Home While One Is Away	.41
Break In at Home While One Is There	.39
Rape or Sexual Assault	.40
Murder	.34
Assault with a Weapon	.37
Car Theft	.38
Robbery or Mugging	.48
Vandalism	.35
Fraud	.24

Source: Ferraro and LaGrange (1992, table 2).

maximum likelihood discrepancy function for confirmatory factor analysis models that is known to be distributed as a chi-square variate under certain conditions (Ferraro and LaGrange 1992, S238; Bollen 1989, 265; Browne 1982, 80-89). Those conditions include the observable associations implied by the model being equal in strength to the corresponding associations in the relevant population (Bollen 1989, 265; Browne 1982, 80-89). Ferraro and LaGrange say that they obtained a value of 19.09 with thirteen degrees of freedom when they applied the transformation to the maximum likelihood discrepancy function for their model (Ferraro and LaGrange 1992, table 6). This value has a probability of .120 in the distribution of chi-square variate with thirteen degrees of freedom (SYSTAT for Windows Version 5, distribution functions). Ferraro and LaGrange take this finding as evidence that their model agrees with the findings of the 1990 *Fear of Crime in America Survey* (Ferraro and LaGrange 1992, S238). Such evidence might establish that their distinction between different kinds of perceived risks of criminal victimization corresponds with the facts.

Yet, I could not replicate the finding that Ferraro and LaGrange (1992) present as their evidence. I examined several models with all of the characteristics that Ferraro and LaGrange (1992) specify for their model, using the same data, and the same computer program as they used. The only way to obtain a value as low as 19.09 with thirteen degrees of freedom for the transformation of the maximum likelihood discrepancy function was by taking the effective sample size to be much smaller than its reported size of 1,089 cases (cf. Ferraro and LaGrange 1992, table 7). So, although Ferraro and LaGrange say that they have a finding to corroborate their distinction between perceived risks of crimes against property and perceived risks of crimes against the person, I do not believe that their finding is genuine.

Readers who are interested in examining Ferraro and LaGrange's (1992) finding for themselves are referred to Ferraro and LaGrange's article in volume forty-seven of the *Journal of Gerontology*. These readers may also want to look at figure 4-2, which has the DOS-LISREL 7.20 (DOS-LISREL Version 7.20) command file that I used in attempting to replicate Ferraro and LaGrange's (1992) finding.

Women and Elderly People Being Especially Likely To Perceive Themselves As at Risk of Criminal Victimization

Whether women and elderly people are especially likely to perceive themselves as at risk of criminal victimization is revealed by findings from two surveys. The surveys in question are Warr's (1984) 1981 survey of residents of Seattle and the *Fear of Crime in America Survey* of 1990.

The Perceived Risks of Criminal Victimization of Women in Seattle

Warr asked his respondents to show how certain they felt that various incidents of criminal victimization would happen to them during the next year by circling numbers between zero and ten beside the description of each incident (Warr 1984, 686). Circles around ten would indicate that they

```
TI  MODIFICATION OF FERRARO AND LAGRANGE'S MODEL: RISK
DA NG=1 NI=9 NO=1081 MA=KM
LA
X5 X6 X1 X2 X3 X4 X7 X8 X9  /
KM
1.0
.29 1.0
.24 .64 1.0
.22 .49 .63 1.0
.24 .50 .62 .66 1.0
.29 .51 .60 .58 .76 1.0
.30 .45 .33 .33 .32 .42 1.0
.33 .52 .54 .60 .59 .68 .50 1.0
.31 .45 .41 .38 .37 .44 .41 .47 1.0
SE
X1 X2 X3 X4 X5 X6 X7 X8 X9  /
MO NX=9 NK=2 LX=FU,FI PH=ST TD=SY,FI
FR LX(1,1) LX(2,1) LX(3,1) LX(4,1)
FR LX(5,2) LX(6,2) LX(7,2) LX(8,1) LX(8,2) LX(9,2)
FR TD(1,1) TD(2,2) TD(3,3) TD(4,4) TD(5,5)
FR TD(6,6) TD(7,7) TD(8,8) TD(9,9)
NF LX(1) - LX(18)
NF PH(2)
OU MI AM
```

Fig. 4-2. DOS-LISREL 7.20 command file (DOS-LISREL Version 7.20). *NO* is the number of respondents to the 1990 *Fear of Crime in America Survey* for whom information was available, according to Ferraro and LaGrange (1992, table 7). *X1* through *X9* are ratings of the chances of experiencing various criminal victimizations during the next year: having a break-in at home while one is there, being raped, being murdered, being attacked with a weapon, being cheated, having a break-in at home while one is away, having one's car stolen, being robbed or mugged, and having one's property vandalised.

felt very certain that the incident would happen to them (Warr 1984, 686). Warr found that the means of the numbers the respondents circled to show how certain they were that they would be threatened and that they would be cheated were lower for women than they were for men (Warr 1984, 690).

The Perceived Risks of Criminal Victimization of Elderly People in the Whole United States

The findings of the 1990 *Fear of Crime in America Survey* were analyzed by Ferraro and LaGrange (1992). They report that the means of the respondents' ratings of their chances of being subjected to various crimes were not higher for those over sixty-five than for those between eighteen and sixty-four for six offenses (Ferraro and LaGrange 1992, table 8). The six offenses were those of being assaulted with a weapon, having a break-in at home while one is there, having a break-in at home while one is away, having property vandalized, having a car stolen, and being cheated.

Discussion

The findings of Warr's (1984) survey and the 1990 *Fear of Crime in America Survey* show that women and elderly people are not especially likely to perceive themselves as at risk of every type of criminal victimization (cf. LaGrange and Ferraro 1989, 697-8; Jeffords 1983, 103-105, 109). Further research may establish that women and the elderly are especially likely to perceive themselves as at risk of some types of criminal victimization, though. Their being especially likely to perceive themselves as at risk of some particular types of criminal victimization may partially explain why they are especially likely to feel unsafe while out alone in their neighbourhoods at night.

Findings Concerning Both Fear of Crime and Perceived Risks of Criminal Victimization

Women and elderly people may tend to feel unsafe while out alone at night solely because they are both especially afraid of crime and especially likely to perceive themselves as at risk of criminal victimization. If so, then, other things being equal, men and women, and elderly and younger people who are equally afraid and equally likely to perceive themselves as at risk should not differ in their likelihoods of feeling unsafe. Findings pertinent to assessing whether this possible state of affairs exists are reported by Ferraro and LaGrange (1992, table 4). The findings come from their analysis of data from the 1990 *Fear of Crime in America Survey*.

The survey respondents were asked to rate out of ten their chances and their fears of being subjected to various presumable crimes (Ferraro and LaGrange 1992, S236). The crimes were these (Ferraro and LaGrange 1992, table 1):

1. Begging or panhandling
2. Cheating, conning, or swindling a person out of her or his money

felt very certain that the incident would happen to them (Warr 1984, 686). Warr found that the means of the numbers the respondents circled to show how certain they were that they would be threatened and that they would be cheated were lower for women than they were for men (Warr 1984, 690).

The Perceived Risks of Criminal Victimization of Elderly People in the Whole United States

The findings of the 1990 *Fear of Crime in America Survey* were analyzed by Ferraro and LaGrange (1992). They report that the means of the respondents' ratings of their chances of being subjected to various crimes were not higher for those over sixty-five than for those between eighteen and sixty-four for six offenses (Ferraro and LaGrange 1992, table 8). The six offenses were those of being assaulted with a weapon, having a break-in at home while one is there, having a break-in at home while one is away, having property vandalized, having a car stolen, and being cheated.

Discussion

The findings of Warr's (1984) survey and the 1990 *Fear of Crime in America Survey* show that women and elderly people are not especially likely to perceive themselves as at risk of every type of criminal victimization (cf. LaGrange and Ferraro 1989, 697-8; Jeffords 1983, 103-105, 109). Further research may establish that women and the elderly are especially likely to perceive themselves as at risk of some types of criminal victimization, though. Their being especially likely to perceive themselves as at risk of some particular types of criminal victimization may partially explain why they are especially likely to feel unsafe while out alone in their neighbourhoods at night.

Findings Concerning Both Fear of Crime and Perceived Risks of Criminal Victimization

Women and elderly people may tend to feel unsafe while out alone at night solely because they are both especially afraid of crime and especially likely to perceive themselves as at risk of criminal victimization. If so, then, other things being equal, men and women, and elderly and younger people who are equally afraid and equally likely to perceive themselves as at risk should not differ in their likelihoods of feeling unsafe. Findings pertinent to assessing whether this possible state of affairs exists are reported by Ferraro and LaGrange (1992, table 4). The findings come from their analysis of data from the 1990 *Fear of Crime in America Survey*.

The survey respondents were asked to rate out of ten their chances and their fears of being subjected to various presumable crimes (Ferraro and LaGrange 1992, S236). The crimes were these (Ferraro and LaGrange 1992, table 1):

1. Begging or panhandling
2. Cheating, conning, or swindling a person out of her or his money

3. Breaking into a person's house while he or she is away
4. Breaking into a person's house while he or she is there
5. Rape or sexual assault
6. Murder
7. Attacking a person with a weapon
8. Stealing a person's car
9. Robbing or mugging a person on the street
10. Damaging or vandalizing someone else's property

Ferraro and LaGrange used the simple sum of the ten ratings of fear as a measure of fear of being criminally victimized (Ferraro and LaGrange 1992, S237). The simple sum of the ten ratings of the chances of becoming victims of the various crimes was used as a measure of perceived risk of criminal victimization (Ferraro and LaGrange 1992, S237). Respondents were matched in terms of their fear of crime and their perceived risk of criminal victimization based on their deviation scores on the measures of these two variables (cf. Ferraro and LaGrange 1992, S237, table 4). Ferraro and LaGrange report that women were still more likely to feel unsafe while out alone at night than men were (Ferraro and LaGrange 1992, table 4).

This finding falsifies the hypothesis that women feel unsafe solely because they are especially likely to fear and to perceive risks of criminal victimization--provided Ferraro and LaGrange (1992) measured fear and perceived risk of criminal victimization accurately. Their measures would be accurate if the respondents' ratings of their fear and their chances of being subjected to the various crimes were tau-equivalent measures of fear of crime and perceived risk of criminal victimization. A set of measurements of a certain quantity are tau-equivalent if a given change in the magnitude of the quantity is associated with changes of equal magnitude in all of the measurements included in the set in question (cf. Lord and Novick 1968, 47). Ferraro and LaGrange (1992) never tested whether the respondents' ratings of their fears of being subjected to the various offenses were tau-equivalent measures of fear of crime. Nor did they test whether the respondents' ratings of their chances of becoming victims of the various offenses are tau-equivalent measures of perceived risk of criminal victimization. So, it is unclear whether the findings from their analysis do falsify the notion that women feel unsafe because they are especially likely to fear and to perceive risks of criminal victimization.

Reflection

There are various ways of conceiving how being especially afraid of crime and especially liable to perceive oneself as at risk may explain women and elderly people being especially likely to feel unsafe while out alone at night. Published findings concerning fear of crime and perceived risk of criminal victimization contribute to resolving some of the issues involved in assessing the truth of these conceptions. The findings corroborate the view that fear of crime is a direct cause of feeling unsafe. They also corroborate the view that another direct cause of feeling unsafe is perceived risk of criminal victimization. Further, from the findings it seems that women are especially afraid of several types of criminal victimization, but that they are not especially likely to perceive themselves as at risk of all types of crimes. Elderly people are also not especially likely to perceive themselves as at risk of all types of crimes. Furthermore, it does not seem to be because elderly people are especially afraid of being subjected to some type of crime that they are especially likely to feel unsafe while out alone in their neighbourhoods at night. This last finding does not jibe with the view that feeling unsafe is an expression, either of fear of crime-in-general, or of fear of certain types of crimes--for that view implies that people feel unsafe primarily because they are afraid of at least certain crimes.

CHAPTER 5

OUTSTANDING ISSUES

Scholars have suggested the three states of mind of fear of crime, perceived risk of criminal victimization, and perceived vulnerability to crime as possible causes for feeling unsafe while out alone at night. There are various ways in which being especially liable to be of these states of mind could explain women and elderly people being especially likely to feel insecure while out alone at night. Assessing the truth of these various explanations raises several issues that cannot be decided based on published findings. Those outstanding issues are identified in this chapter.

Outstanding Issues Concerning Fear of Crime

Published findings are consistent with the proposition that fear of crime is a direct cause of feeling unsafe while out alone in one's neighbourhood at night. Yet, these findings comprise estimates only of the linear associations between fears of various crimes and feeling unsafe. Until it is known whether the associations between these variables are predominantly linear, it will not be clear whether the estimates of the linear associations accurately estimate the total associations.

The view that feeling unsafe is an expression of fear of crime implies that fear of crime is a direct cause of feeling unsafe. Yet, that view also implies that fear of crime is the primary cause of feeling unsafe, and that is not supported by published findings. From those findings, it seems that being especially afraid of crime is not the cause of elderly people being especially likely to feel unsafe while out alone at night. So, it cannot be true without qualification that fear of crime is the primary cause of feeling unsafe. Then, the view that feeling unsafe is an expression of fear of crime should be qualified or rejected.

Ferraro and LaGrange (1992, S238) maintain that the distinction Yin (1980) made between fearing crimes against property and fearing crimes against the person corresponds with the facts. If Ferraro and LaGrange (1992) are right, then it may be that these different kinds of fear of crime have different effects on how unsafe people feel while out alone at night. Ferraro and LaGrange's (1992) position is neither supported nor contradicted by any published findings, however. Decisive evidence has still to be produced.

Published findings show women to be especially afraid of several types of criminal victimization. Yet, it remains to be seen how important this phenomenon is for understanding women being more likely to feel unsafe while out alone in their neighbourhoods at night than men.

Outstanding Issues Concerning Perceived Risks of Criminal Victimization

Ferraro and LaGrange distinguish between perceived risks of crimes against property and perceived risks of crimes against the person (Ferraro and LaGrange 1992, S237-38), and maintain that this distinction corresponds with an existing state of affairs (Ferraro and LaGrange 1992, S238-39). Perhaps perceived risks of crimes against property and perceived risks of crimes against the person do derive from different states of mind. If so, then it may be that these different states of mind have different effects on how insecure people feel while out alone in their neighbourhoods at night. Yet, it has never been established that perceived risks of crimes against property and perceived risks of crimes against the person derive from different states of mind.

Published findings indicate that women and elderly people are not especially likely to perceive themselves as at risk of all types of criminal victimization. They may be especially likely to perceive themselves as at risk of some types of criminal victimization, though, and that may partially or completely explain why they are especially likely to feel unsafe while out alone at night. The importance of perceived risks of criminal victimization for understanding women and elderly people being especially likely to feel unsafe while out alone in their neighbourhoods at night cannot be fully evaluated based on published findings, however.

Outstanding Issues Concerning Perceived Vulnerability to Crime

That women and the elderly are more likely to feel unsafe than men and younger adults are, may be partially or even completely explained by women and elderly people being more likely to perceive themselves as vulnerable to crime. There are no published findings pertinent to assessing whether these possibilities correspond with the facts. Before one could make such an assessment, one would need an estimate of the effect of perceived vulnerability to crime on how safe people feel. One would also need to know whether women and elderly people are especially liable to perceive themselves as vulnerable to crime.

Anticipation

The outstanding issues concerning fear of crime, perceived risk of criminal victimization, perceived vulnerability to crime, and the phenomenon of women and elderly people being especially likely to feel unsafe while out alone at night will now be addressed. The method that will be applied in dealing with these issues is specified in the next chapter. The data that will used are described in the succeeding one.

CHAPTER 6

METHOD

The previous chapter identified several unresolved issues that are pertinent to explaining the phenomenon of women and elderly people being especially likely to feel unsafe while out alone in their neighbourhoods at night. These issues are addressed in this dissertation with a view to facilitating the scientific explanation of the phenomenon. The present chapter contributes to that objective by clarifying the meaning that the term *explanation* has among scientists.

Scientific Explanations and Rules of Inference

Scientists use the term *explanation* in a variety of ways (Nagel 1979, 15-20). Their various uses for the term can be loosely summed up, though, in ordinary English, by saying that it refers to the activity of formulating a general account of the determining conditions of an event (Nagel 1979, 4). One could falsify such an account by showing that the event in question does not occur under the circumstances described as their general determining conditions (Nagel 1979, 12-14).

What scientists mean by the term *explanation* can be specified precisely only in languages with explicit rules of inference. Such rules are needed to specify the sense in which the circumstances described in the beginning of an account may be the determining conditions of an event described in the conclusion. Explicit rules of inference would also be needed for specifying how a proposed explanation is falsified when an event fails to occur under the circumstances described as its determining conditions.

Several explanations for women and elderly people being especially likely to feel unsafe while out alone in their neighbourhoods at night were mooted in chapter three. They were articulated in the English language. To initially express explanations in a natural language such as English is appropriate, for it is in natural languages that the problems that truly interest people first arise and are discussed. Natural languages have no explicit rules of inference, though. So, there is no precise sense in which the various explanations put forward in chapter three, as initially formulated, could be scientific.

To make the explanations scientific, I will translate them into a language that does have explicit rules of inference: the language of algebra. Formulating a set of principles to cover any exercise of translating a natural language may be impossible (Quine 1960, 26-27). Those engaged in such an exercise can use the natural language to discuss whether a proposed translation is satisfactory, however. For the purposes of this investigation, I assume people who are competent in the natural language of English and the artificial language of algebra can agree on whether the translations I make between the two are acceptable.

Scientific Explanations Formulated as Moment Structure Models

Moment structure modelling (Bentler 1983, 13–42) provides a comprehensive approach to expressing, studying, and testing scientific explanations in algebraic form. I apply this approach in translating ordinary English explanations into algebra.

Moment structure models classify the variables in an explanation as either endogenous or exogenous, and as either manifest or latent. A variable is endogenous if its determining conditions are specified, and manifest if it represents the results of a concrete operation.

The second moment of each endogenous variable is expressed as a linear transformation of its first moment and the first and second moments of the variables that directly determine its value. One variable directly determines the value of another if changes in the first can always be expected to produce changes in the second.

A moment structure model is identified if the value of each unknown in the linear transformations it comprises can be expressed as some function of the first, second, and joint moments of the manifest variables. The unknown terms of an identified model can be estimated for a population from a sample by several statistical techniques. These techniques involve finding a set of estimates to minimize some discrepancy function (Browne 1982, 81). Discrepancy functions are multiplicative functions of the differences between the first- and second-order moments of the manifest variables for the population implied by the model and the corresponding moments obtained from the sample (Jöreskog and Sörbom 1989, 19; Browne 1982, 80-89).

A moment structure model can be falsified by showing that it is incomplete or unsound. Models are incomplete if they do not fully cover the parameters they are intended to represent (cf. Bergmann, Moor, and Nelson 1990, 216). Models are unsound if they include terms for which there are no corresponding parameters (cf. Bergmann, Moor, and Nelson 1990, 216).

Discrepancy functions can be used to test whether models are incomplete. Take plim x to be the probability limit of x, take $F(\theta)$ to be the value of an asymptotic distribution free discrepancy function, and take N to be the size of a sample drawn from the population in question. If

(6.1) $$\operatorname*{plim}_{N \to \infty} F(\theta) = 0$$

for a model having p manifest variables and t unknowns, then the quantity

(6.2) $$2(N - 1)F(\theta)$$

has a sampling distribution that is, asymptotically, chi-square with $\frac{1}{2}[(p)(p + 1)] - t$ degrees of freedom under certain conditions (Bentler 1983, 20; Browne 1982, 97-100). The conditions are that the samples consist of at least one hundred cases and that the samples are drawn by the method of simple random sampling (Bollen 1989, 267). This property of equation (6.2) may allow one to test the hypothesis that equation (6.1) is false for a proposed model in a specified population. If this hypothesis is not rejected, there may be differences between the moments of the manifest variables implied by the model and the corresponding moments in the population. The model may be incomplete.

To prove that a model is unsound, it would be sufficient to show that at least one of the terms of the model does not correspond to any existing parameter. Take θ to be a term in a model, take $\hat{\theta}$ be an estimate of θ for a population, take $AVAR(\hat{\theta}_N)$ to be the asymptotic variance of $\hat{\theta}$, and take $avar(\hat{\theta}_N)$ to be a sample estimate of $AVAR(\hat{\theta}_N)$. If

$$\theta = 0$$

in a specified population, then the sampling distribution of the ratio

$$\frac{\hat{\theta}}{\sqrt{avar(\hat{\theta}_N)}} \tag{6.3}$$

will be, asymptotically, standard normal, in large samples, provided $\hat{\theta}$ and avar($\hat{\theta}_N$) are consistent estimates of θ and AVAR($\hat{\theta}_N$) (Browne 1982, 95; Bollen 1989, 469). This property of (6.3) may allow one to test the hypothesis that

$$\theta \neq 0$$

in a population. If this hypothesis is rejected, the magnitude of the parameter represented by θ may be zero. There may not be a parameter corresponding to θ. The model is unsound in including θ.

A model that can be falsified may still be retained because it depicts a set of parameters in a simple way, without any serious omissions. Such models may be described as *economical*. The ratio of (6.2) to its degrees of freedom is a quantity that expresses the economy of a model (cf. Jöreskog 1969, 201). The numerator of this ratio decreases as the model becomes more complete. The denominator increases as the number of unknowns decreases, and the fewer unknowns there are, the more simple is the model. So, smaller ratios are obtained for models providing simpler, more complete expressions of reality. Opinions vary as to how high the ratio may be in order for a model to still be economical (Saris, Den Ronden, and Satorra 1987, 206; Byrne 1989, 55). Russell L. Dalton says that a ratio of ten "is often considered a good fit" (Dalton 1981, 424, n. 6), but he neglects to say by whom. Blair Wheaton and his colleagues judge a ratio of around five or less as "beginning to be reasonable" for sample sizes of around one thousand (Wheaton and others 1977, 99). They make this judgement based upon inspection of the sizes of the residual moments corresponding to various values of the confirmatory maximum likelihood discrepancy function. Residual moments are the differences between the moments of the manifest variables implied by the estimated model and the corresponding moments calculated from the sample.

Summation

This dissertation aims to contribute to the scientific explanation of the tendency among women and elderly people not to feel safe while out alone at night. The term *scientific explanation* is taken as rcferring to any account of a phenomenon that can be translated into a sound moment structure model, which, if it is not complete, is at least economical.

CHAPTER 7

DATA

The various outstanding issues pertinent to explaining the phenomenon of women and elderly people being especially likely to feel unsafe while out alone in their neighbourhoods at night can be addressed using available survey data. The data in question come from the *British Crime Surveys* of 1984, and the *Fear of Crime in America Survey* of 1990.

The Fear of Crime in America Survey *of 1990*

The population and the sample of the *Fear of Crime in America Survey* of 1990 are described above, in chapter four. Also described in chapter four are the ways in which the respondents were asked to rate their fears of various crimes and their chances of being subjected to those crimes during the next year. Ferraro and LaGrange report the correlations between the ratings of fear of the various crimes, and between the ratings of the chances of being subjected to the various crimes in their article in volume forty-seven of the *Journal of Gerontology* (Ferraro and LaGrange 1992, table two, table three). These correlations are reproduced here in tables 7-1 and 7-2.

Table 7-1. Correlations between Ratings of Fear of Various Crimes, Sample of Adults in the United States in 1990 (N = 1,089), Pearson Correlation Coefficients, List-wise Deletion

	Break-in at Home While One Is There	Break-in at Home While One Is Away	Rape or Sexual Assault	Murder	Attack with a Weapon
Break-in at Home While One Is There	1.0				
Break-in at Home While One Is Away	.67	1.0			
Rape or Sexual Assault	.69	.48	1.0		
Murder	.69	.47	.72	1.0	
Attack with a Weapon	.68	.53	.67	.81	1.0

Table 7-1. *Continued*

	Break-in at Home While One Is There	Break-in at Home While One Is Away	Rape or Sexual Assault	Murder	Attack with a Weapon
Car Theft	.36	.49	.30	.37	.47
Robbery or Mugging	.55	.52	.59	.64	.72
Vandalization of Property	.38	.49	.34	.37	.44
Cheating, Conning, or Swindling	.32	.38	.37	.31	.34

Table 7-1. *Continued.*

	Car Theft	Robbery or Mugging	Vandalization of Property	Cheating, Conning, or Swindling
Car Theft	1.0			
Robbery or Mugging	.55	1.0		
Vandalization of Property	.48	.53	1.0	
Cheating, Conning, or Swindling	.42	.46	.40	1.0

Source: Ferraro and LaGrange (1992, table 2).

The British Crime Surveys *of 1984*

The population of the 1984 *British Crime Surveys* was that of non institutionalized individuals who were over sixteen years of age at the time of the survey and residing in England and Wales (Hough and Mayhew 1985, 78). Electoral registers were used to select names of potential respondents, these being chosen so that a person registered to vote in an

Table 7-2. Correlations between Ratings of Chances of Being Subjected to Various Crimes, Sample of Adults in the United States in 1990 (N = 1,089), Pearson Correlation Coefficients, List-wise Deletion

	Break-in at Home While One Is There	Break-in at Home While One Is Away	Rape or Sexual Assault	Murder	Attack with a Weapon
Break-in at Home While One Is There	1.0				
Break-in at Home While One Is Away	.64	1.0			
Rape or Sexual Assault	.63	.49	1.0		
Murder	.62	.50	.66	1.0	
Attack with a Weapon	.60	.51	.58	.76	1.0

Table 7-2. *Continued*

	Break-in at Home While One Is There	Break-in at Home While One Is Away	Rape or Sexual Assault	Murder	Attack with a Weapon
Car Theft	.33	.45	.33	.32	.42
Robbery or Mugging	.54	.52	.60	.59	.68
Vandalization of Property	.41	.45	.38	.37	.44
Cheating, Conning, or Swindling	.24	.29	.22	.24	.29

Table 7-2. *Continued.*

	Car Theft	Robbery or Mugging	Vandalization of Property	Cheating, Conning, or Swindling
Car Theft	1.0			
Robbery or Mugging	.41	1.0		
Vandalization of Property	.24	.47	1.0	
Cheating, Conning, or Swindling	.30	.33	.31	1.0

Source: Ferraro and LaGrange (1992, table 3).

inner-city constituency was 1.5 times more likely to be picked than someone registered elsewhere (Hough and Mayhew 1985, 79). Once potential respondents had been selected, interviewers set out to contact them at the addresses shown on the electoral registers. If a selected person had moved from the listed address, then someone else was chosen to be interviewed from among the people over sixteen at that address (Hough and Mayhew 1985, 80). Only 11,030, or 77 percent, of the 14,277 people who were picked to participate were interviewed (Hough and Mayhew 1985, 80).

The interviewees matched the general population in terms of age, residential location, and various economic characteristics, however (NOP Market Research Limited 1987, 22-24).

The respondents were asked how safe they felt walking alone in the vicinity after dark: very unsafe, a bit unsafe, fairly safe, or very safe (Principal Investigator, Home Office Research and Planning Unit 1987b, main questionnaire q. 7a). The respondents were also asked whether they were very worried, fairly worried, not very worried, or not at all worried, about the following criminal victimizations (Principal Investigator, Home Office Research and Planning Unit 1987b, Main Questionnaire q. 8):

1. Having their homes broken into and something stolen
2. Being mugged and robbed
3. Having their homes or property damaged by vandals
4. Being attacked by strangers
5. Being raped

Then the respondents were queried about how likely they thought it was that these victimizations would happen to them in the next year (Principal Investigator, Home Office Research and Planning Unit 1987b, Main Questionnaire q. 9(a)). In answering, the repondents were invited to choose between saying that the victimizations were certain not to happen to them, not at all likely to happen to them, fairly unlikely, fairly likely, very likely, or certain to happen to them (Principal Investigator, Home Office Research and Planning Unit 1987b, Main Questionnaire q. 9(a)). The respondents were asked to think about a hundred houses in the area and to say how many of these they thought might be burgled in the next year

(Principal Investigator, Home Office Research and Planning Unit 1987b, Main Questionnaire q. 9(b)). They were also asked to think about a hundred average people in the area and to say how many of these they thought might be mugged (Principal Investigator, Home Office Research and Planning Unit 1987b, Main Questionnaire q. 9(d)). Another question that the respondents were asked was whether they thought their chances of being mugged were less, about the same, or more than those of other people in the vicinity (Principal Investigator, Home Office Research and Planning Unit 1987b, Main Questionnaire q. 9(e)). Finally, the respondents were requested to provide certain vital statistical information about themselves, including their sexes and their ages.

Women alone were asked how worried they were about being raped and how likely they thought it was that they would be raped in the next year (Principal Investigator, Home Office Research and Planning Unit 1987b, Main Questionnaire q. 8). Why men were not asked these questions is not explained in any of the publications on the series of *British Crime Surveys* that Pat Mayhew and her fellow bibliographers have listed (Mayhew, Elliott, and Dowds, 1989, app. H). The reason may have been that, under the law prevailing in England and Wales at the time of the survey, males could not be victims of rape (U.K. Laws, Statutes, etc. 1976; Mezey 1988, 66). If to worry about being raped is to be worried about something that could not happen to a man, then all the male respondents may be classified as not having been at all worried about becoming rape victims. Likewise, if to think about the likelihood of being raped is to think about the likelihood of something to which a man could not be subjected, then all the male respondents may be classified as having thought that they were certain not to be raped. In thus classifying men, one would be making the assumption that it is not important to consider people's responses to the threat of forcible sodomy, which is another crime covered by *rape* in ordinary British English (*The Concise Oxford Dictionary of Current English* 1990). One would also be making the assumption that in responding to the questions about the threat of being raped, the female survey respondents took the questions to be referring to forcible penetrations of the vagina rather than the anus.

A record of the answers that the participants in the 1984 *British Crime Surveys* gave to the various questions they were asked is saved in the file BCS84.RAW in the root directory of the micro floppy disk accompanying this dissertation. The disk is formatted to high density for use with IBM microcomputers, and all the information on the disk is written in the American Standard Code for Information Interchange. File BCS84.RAW has a single line with sixty-eight columns of information for each survey respondent. The records of the respondents' answers to any given question they were asked appear in the same columns on every line. Numerals are used to represent answers referring to qualities as well as quantities. Some of the cases with data omitting on a variable have been assigned numerical codes on that variable to signify that data is missing, while others have either no values or invalid values on the variable in question. Table 7-3 shows how numerals were assigned to represent answers referring to qualities. Table 7-4 gives the columns in which the numerals representing any answer recorded in BCS84.RAW may be located.

Table 7-3. Values of Variables in File BCS84.RAW and Corresponding Numerical Codes

Variable	Values	Numerical Code
How safe the person felt walking alone in the vicinity after dark	Very Safe	1
	Fairly Safe	2
	A bit unsafe	3
	Very Unsafe	4
How worried the person was about having her or his home broken-into and something stolen	Very worried	1
	Fairly worried	2
	Not very worried	3
	Not at all worried	4
	Missing	5

Table 7-3. *Continued.*

Variable	Values	Numerical Code
How worried the person was about being mugged and robbed	Very worried	1
	Fairly worried	2
	Not very worried	3
	Not at all worried	4
	Missing	5
How worried a woman was about being raped	Very worried	1
	Fairly worried	2
	Not very worried	3
	Not at all worried	4
	Missing	5
How worried the person was about having her or his home or property damaged by vandals	Very worried	1
	Fairly worried	2
	Not very worried	3
	Not at all worried	4
	Missing	5

Table 7-3. *Continued.*

Variable	Values	Numerical Code
How worried the person was about being attacked by strangers	Very worried	1
	Fairly worried	2
	Not very worried	3
	Not at all worried	4
	Missing	5
How likely the person thought it was that his or her home or property would be damaged by vandals in the next year	Certain to be	1
	Very likely to be	2
	Fairly likely to be	3
	Fairly unlikely to be	4
	Not at all likely to be	5
	Certain not to be	6
	Missing	7

Table 7-3. *Continued.*

Variable	Values	Numerical Code
How likely the person thought it was that he or she would be mugged and robbed in the next year	Certain to be	1
	Very likely to be	2
	Fairly likely to be	3
	Fairly unlikely to be	4
	Not at all likely to be	5
	Certain not to be	6
	Missing	7
How likely the person thought it was that he or she would be attacked by strangers in the next year	Certain to be	1
	Very likely to be	2
	Fairly likely to be	3
	Fairly unlikely to be	4
	Not at all likely to be	5
	Certain not to be	6
	Missing	7

Table 7-3. *Continued.*

Variable	Values	Numerical Code
How likely the person thought it was that he or she would have his or her home broken-into and something stolen in the next year	Certain to	1
	Very likely to	2
	Fairly likely to	3
	Fairly unlikely to	4
	Not at all likely to	5
	Certain not to	6
	Missing	7
How likely a woman thought it was that she would be raped in the next year	Certain to be	1
	Very likely to be	2
	Fairly likely to be	3
	Fairly unlikely to be	4
	Not at all likely to be	5
	Certain not to be	6
	Missing	7

Table 7-3 *Continued.*

Variable	Values	Numerical Code
How many out of a hundred houses in the vicinity the person thought would be burgled in the next year	0 - 100	-
How many out of a hundred average people in the vicinity the person thought would be mugged in the next year	0 - 100	-
How the person thought her or his chances of being mugged compared with those of everyone else in vicinity	About the same	1
	More than everyone else's	2
	Less than everyone else's	3
	Missing	4

Table 7-3. *Continued.*

Variable	Values	Numerical Code
Sex	Male	1
	Female	2
Age	0 - 96, 99	-
	Missing	97

Table 7-4. Column or Columns Where Variables in File BCS84.RAW are Located

Variable	Column or Columns
How safe the person felt walking alone in the vicinity after dark	2
How worried the person was about having her or his home broken-into and something stolen	4
How worried the person was about being mugged and robbed	6
How worried a woman was about being raped	8

Table 7-4. *Continued.*

Variable	Column or Columns
How worried the person was about having her or his home or property damaged by vandals	10
How worried the person was about being attacked by strangers	12
How likely the person thought it was that his or her home or property would be damaged by vandals in the next year	14
How likely the person thought it was that he or she would be mugged and robbed in the next year	16
How likely the person thought it was that he or she would be attacked by strangers in the next year	18

Table 7-4. *Continued.*

Variable	Column or Columns
How likely the person thought it was that he or she would have his or her home broken-into and something stolen in the next year	20
How likely a woman thought it was that she would be raped in the next year	22
How many out of a hundred houses in the vicinity the person thought would be burgled in the next year	24 - 26
How many out of a hundred average people in the vicinity the person thought would be mugged in the next year	28 - 30
How the person thought her or his chances of being mugged compared with those of everyone else in vicinity	32
Sex	34
Age	36-37

CHAPTER 8

FINDINGS FROM AVAILABLE DATA

In this chapter, findings from available data are brought to bear on various outstanding issues relevant to explaining the tendency of women and elderly people to feel unsafe while out alone in their neighbourhoods at night. The issues concern fear of crime, perceived risk of criminal victimization, and perceived vulnerability to crime.

Findings Concerning Fear of Crime

The Form of Associations between Fears of Crimes and Feelings of Insecurity While Out Alone at Night

The first outstanding issue to be dealt with is whether the associations between fears of crimes and feelings of insecurity are predominantly linear. This issue can be addressed for the population of adults in England and Wales using data from the *British Crime Surveys* of 1984.

Take y to be how safe individuals in that population felt walking out alone in the vicinity of their homes after dark, and x_i to be their fear of a given crime. In the 1984 *British Crime Surveys*, a sample of the population were asked whether they felt very unsafe, a bit unsafe, fairly safe, or very safe walking out alone in the vicinity of their homes after dark. Let the replies to this question be denoted by y^*. The variable y

is presumably continuous, while the variable y^* is discrete. Yet, if y^* is taken as an indicator of y, then the form of the association of y^* with x_i may afford some knowledge of form of the association between y and x_i. If the magnitudes of the effects of changes in x_i were to vary across the ordered categories of y^*, then the relationship between these two variables may not be linear (Boyle 1970, 471). Unless the nonlinearity was due to how the scale for x_i was calibrated, or to how the range of y was divided into categories of y^* (Hartwig and Dearing 1979, 57), the nonlinear relationship of y^* with x_i would be evidence of a nonlinear association between y and x_i (Hartwig and Dearing 1979, 57).

If the association of y with x_i was at least monotonic, then further evidence of nonlinearity might be found by comparing the value of the rank correlation coefficient for y^* and x_i with the value of the Pearson coefficient of correlation. The value of the rank correlation coefficient for y^* and x_i would indicate the strength of the monotonic association between y and x_i, whereas the value of the Pearson coefficient of correlation would indicate the strength of the linear association. The strength of the monotonic association between y and x_i may be described as the sum of the strengths of the linear and nonlinear associations between the two. So, if the strength of the monotonic association appeared to be greater than the strength of the linear association, some nonlinear association could exist as well.

A moment structure model was devised to study the form of the association between y and x_i for the crimes of burglary, robbery, vandalism, assault and rape. The effects of changes in x_i were compared across the ordered categories of y^*. The values of rank correlation coefficients for $y*$ with x_i were compared with the values of Pearson coefficients of correlation.

Model Specification

The model that was devised is the one that is obtained by finding the product of every combination of the equations (8.1) through (8.5) and taking expectations subject to the specifications of (8.6) through (8.9) (cf. Long 1983, 32). The model obtained at in this way will be referred to as *model (8.1-9).*

(8.1) $$y* = y_1 + 2y_2 + 3y_3$$

(8.2) $$y_1 = \beta_{14}y_4 + \beta_{15}y_5 + \beta_{16}y_6 + \ldots + \beta_{118}y_{18} + \zeta_1$$

(8.3) $$y_2 = \beta_{24}y_4 + \beta_{25}y_5 + \beta_{26}y_6 + \ldots + \beta_{218}y_{18} + \zeta_2$$

(8.4) $$y_3 = \beta_{34}y_4 + \beta_{35}y_5 + \beta_{36}y_6 + \ldots + \beta_{318}y_{18} + \zeta_3$$

$$\begin{bmatrix} y_4 \\ y_5 \\ y_6 \\ . \\ . \\ . \\ y_{18} \end{bmatrix} = \begin{bmatrix} \mathbf{A} & \mathbf{0} & \mathbf{0} & \mathbf{0} & \mathbf{0} \\ \mathbf{0} & \mathbf{A} & \mathbf{0} & \mathbf{0} & \mathbf{0} \\ \mathbf{0} & \mathbf{0} & \mathbf{A} & \mathbf{0} & \mathbf{0} \\ \mathbf{0} & \mathbf{0} & \mathbf{0} & \mathbf{A} & \mathbf{0} \\ \mathbf{0} & \mathbf{0} & \mathbf{0} & \mathbf{0} & \mathbf{A} \end{bmatrix} \begin{bmatrix} y_4 \\ y_5 \\ y_6 \\ . \\ . \\ . \\ y_{18} \end{bmatrix} + \begin{bmatrix} \mathbf{B} \\ \mathbf{B} \\ \mathbf{B} \\ \mathbf{B} \\ \mathbf{B} \end{bmatrix} \begin{bmatrix} x_1* \\ x_2* \\ x_3* \\ x_4* \\ x_5* \end{bmatrix} \tag{8.5}$$

$$\mathbf{A} = \begin{bmatrix} 0 & -2 & -3 \\ -0.5 & 0 & -1.5 \\ -0.\dot{3} & -0.\dot{6} & 0 \end{bmatrix} \tag{8.6}$$

$$\mathbf{B} = \begin{bmatrix} 1 & 0 & 0 & 0 & 0 \\ 0.5 & 0 & 0 & 0 & 0 \\ 0.\dot{3} & 0 & 0 & 0 & 0 \end{bmatrix} \tag{8.7}$$

$$\mathbf{0} = \begin{bmatrix} 0 & 0 & 0 \\ 0 & 0 & 0 \\ 0 & 0 & 0 \end{bmatrix} \tag{8.8}$$

$$\begin{aligned} &E(y*) = E(y_i) = E(x_j*) = E(\zeta_k) = 0, \\ &\qquad \text{for } i = 1, 2, 3, \ldots, 18, \\ &\qquad\quad j = 1, 2, 3, \ldots, 5, \\ &\qquad \text{and } k = 1, 2, 3 \end{aligned} \tag{8.9}$$

The term β_{ij} in equations (8.2) through (8.4) is a constant for i, j = 1, 2, 3, . . . 18. The endogenous variables y_1, y_2, and y_3 are the probabilities of a survey participant having said *fairly safe*, *a bit unsafe*, or *very unsafe* in reply to y^*. The exogenous variables x_1^* through x_5^* represent the survey participant's answers to the queries in the 1984 *British Crime Surveys* concerning how worried he or she was about these five criminal victimizations (Principal Investigator, Home Office Research and Planning Unit 1987b, Main Questionnaire q. 8):

1. Having his or her home broken into and something stolen
2. Being mugged and robbed
3. Having his or her home or property damaged by vandals
4. Being attacked by strangers
5. Being raped

Terms y_4, y_7, y_{10}, y_{13}, and y_{16} represent the probabilities of the person having said *not very worried* in response to items x_1^* through x_5^*. The likelihoods of him or her having said *fairly worried* are denoted by y_5, y_8, y_{11}, y_{14}, and y_{17}, while the likelihoods of him or her having said *very worried* are represented by y_6, y_9, y_{12}, y_{15}, and y_{18}. The expression $E(\underline{x})$ stands for the expected value of $\underline{x}$. The term ζ_i represents anything that determines the value of y_i of which it is true that

$$E(x_j^* \zeta_i) = 0 \text{ for } i = 1, 2, 3, \text{ and } j = 1, 2, 3, 4, 5.$$

Explication

According to model (8.1-9), changes in the level of a person's worry about burglary, robbery, vandalism, assault or rape affected the level of insecurity he or she felt while out alone in the neighbourhood at night. The total effect of any change in a person's level of worry about a particular crime depended on the effects of that change on the probabilities of the person experiencing the various levels of insecurity. If to worry about a crime is to be afraid of it (cf. Ferraro and LaGrange 1988, n. 7), then model (8.1-9) may be used to compare the effects of changes in a person's fear of a crime across the ordered categories of feeling very safe, fairly safe, a bit unsafe, or very unsafe walking out alone after dark.

Identification and Estimation

Model (8.1-9) is identified. All of the unknown terms are in equations (8.2) through (8.4), and equations like these are always identified (Bollen 1989, 96).

Estimates for the model were based on the second-order moments of y_1 through y_{11} as calculated from the 1984 *British Crime Surveys* data in the file BCS84.RAW that was described above, in chapter seven. In calculating the second-order moments of y_1 through y_{11}, it was assumed that all the male respondents to the survey were not at all worried about being raped. Second-order moments of the variables y_1 through y_{11} were calculated both when the cases with data omitting on any one of those variables were deleted pair-wise, and when the cases that were missing data were deleted list-wise (cf. Hayduk 1987, 327). Estimates for model (8.1-9) based on statistics calculated using pair-wise deletion of the cases missing data mostly corresponded up to two decimal places with estimates based on statistics calculated using list-wise deletion.

Confirmatory maximum likelihood estimation was used (cf. Jöreskog 1969, 1973). This statistical method will provide consistent estimates if the sample is true to the population (cf. Jöreskog and Sörbom 1989, 20). For that condition to have been fulfilled, it is necessary that the factors deciding the composition of the sample had no direct effects on y^*, or were independent of the exogenous variables x_1 through x_4.

The estimation was done using the DOS-LISREL 7.20 computer program (DOS-LISREL Version 7.20) with a matrix of second-order moments that was prepared with the program DOS-PRELIS 1.20 (DOS-PRELIS Version 1.20). Both programs were run on a Brite FRX386DX-33 MHz personal computer, using MS-DOS Version 5.0 as the operating system in conjunction with Microsoft Windows Version 3.1 (DOS-LISREL Version 7.20; MS-DOS Version 5.0; Microsoft Windows Version 3.1). Rank correlation coefficients were obtained using the *CROSSTABS* procedure of the SPSS/PC+ program (SPSS/PC+ Version 4.0).

Results

Table 8-1 gives the values of Pearson coefficients of correlation for selected pairs of variables of model (8.1-9). The values were calculated from estimates of the second-order moments of y_1 through y_{11} that were obtained when the cases with data missing were deleted pair-wise. The signs of the values in table 8-1 imply that x_1*, x_2*, x_3*, x_4*, and x_5* were negatively associated with y_1, but positively associated with y_2 and y_3. From the magnitudes of the values, it is apparent that x_1* through x_5* had much stronger associations with y_2 and y_3 than they had with y_1. It is also apparent that x_1* through x_5* had associations with y_3 that were twice as strong as their associations with y_2. So, the effects of changes in x_1* through x_5* would have varied across the ordered categories of y*.

Table 8-2 shows the values of the rank correlation coefficients of y* with x_i, for i = 1, 2, 3, 4, 5. These values may be compared with the values for the corresponding Pearson coefficients of correlation in table 8-1. Precise estimates of Pearson coefficients of correlation are smaller in value than the rank correlation coefficients by more than 1 percent only for the associations of worrying about robbery and worrying about rape with feeling unsafe out alone at night.

Table 8-1. Values of Pearson Coefficients of Correlation for Selected Pairs of Variables of Model (8.1-9), English and Welsh Adults in 1984 (N = 10,863), Confirmatory Maximum Likelihood Estimates from Second-Order Moments, Pair-wise Deletion

Variables	Value of Pearson Coefficient of Correlation
x_1 and y^*	.279
x_1 and y_1	- .011
x_1 and y_1	.091
x_1 and y_1	.206
x_1 and y^*	.453
x_1 and y_1	- .039
x_1 and y_1	.196
x_1 and y_1	.324

Table 8-1. *Continued.*

Variables	Value of Pearson Coefficient of Correlation
x_1 and y^*	.294
x_1 and y_1	- .006
x_1 and y_1	.105
x_1 and y_1	.208
x_1 and y^*	.438
x_1 and y_1	- .037
x_1 and y_1	.193
x_1 and y_1	.294

Table 8-1. *Continued.*

Variables	Value of Pearson Coefficient of Correlation
x_5 and y^*	.441
x_5 and y_1	- .051
x_5 and y_2	.206
x_5 and y_3	.293

Table 8-2. Values of Rank Correlation Coefficients for Variables of Model (8.1-9), English and Welsh Adults in 1984 (N = 10,863), Pair-wise Deletion

Variables	Value of Rank Correlation Coefficient
x_1 and y^*	.278
x_2 and y^*	.464
x_3 and y^*	.291
x_4 and y^*	.432
x_5 and y^*	.459

The Distinction between Fear of Crimes against Property and Fear of Crimes against the Person

The next issue to be addressed is whether Yin's (1980) distinction between fearing crimes against property and fearing crimes against the person corresponds with the facts. If the distinction does correspond with the facts, then fears of burglary, car theft, vandalism, and fraud would derive from a different state of mind than the one from which fears of rape, murder, and assault derive. Whether this possibility existed in the population of adults in the United States in 1990 was tested by formulating the possibility algebraically in a moment structure model and seeing whether that model was true or false for said population. The model in question will be referred to as *model (8.10-21)*, and is defined by the following equations:

(8.10)
$$x_1 = \lambda_{11}\xi_1 + \lambda_{12}\xi_2 + \delta_1$$

(8.11)
$$x_2 = \lambda_{21}\xi_1 + \delta_2$$

(8.12)
$$x_3 = \lambda_{32}\xi_2 + \delta_3$$

(8.13) $$x_4 = \lambda_{42}\xi_2 + \delta_4$$

(8.14) $$x_5 = \lambda_{42}\xi_2 + \delta_5$$

(8.15) $$x_6 = \lambda_{41}\xi_1 + \delta_6$$

(8.16) $$x_7 = \lambda_{71}\xi_1 + \lambda_{72}\xi_2 + \delta_7$$

(8.17) $$x_8 = \lambda_{81}\xi_1 + \delta_8$$

(8.18) $$x_9 = \lambda_{91}\xi_1 + \delta_9$$

(8.19) $$E(x_i) = E(\xi_j) = E(\delta_i) = 0,$$

for $i = 1, 2, 3, \ldots, 9$, and $j = 1, 2$

(8.20) $$E(\xi_1\ \xi_1) = E(\xi_2\ \xi_2) = 1$$

$$
\text{(8.21)} \qquad E(\delta_i\ \delta_j) = \begin{bmatrix}
E(\delta_1\delta_1) & E(\delta_1\delta_2) & 0 & 0 & 0 & 0 & 0 & 0 & 0 \\
E(\delta_2\delta_1) & E(\delta_2\delta_2) & 0 & 0 & 0 & 0 & 0 & 0 & 0 \\
0 & 0 & E(\delta_3\delta_3) & 0 & 0 & 0 & E(\delta_3\delta_7) & 0 & E(\delta_3\delta_9) \\
0 & 0 & 0 & E(\delta_4\delta_4) & 0 & 0 & 0 & 0 & 0 \\
0 & 0 & 0 & 0 & E(\delta_5\delta_5) & 0 & 0 & 0 & 0 \\
0 & 0 & 0 & 0 & 0 & E(\delta_6\delta_6) & 0 & 0 & 0 \\
0 & 0 & E(\delta_7\delta_3) & 0 & 0 & 0 & E(\delta_7\delta_7) & 0 & E(\delta_7\delta_9) \\
0 & 0 & 0 & 0 & 0 & 0 & 0 & E(\delta_8\delta_8) & 0 \\
0 & 0 & E(\delta_9\delta_3) & 0 & 0 & 0 & E(\delta_9\delta_7) & 0 & E(\delta_9\delta_9)
\end{bmatrix}
$$

$$\text{for } i, j = 1, 2, 3, \ldots, 9$$

In equations (3.15) through (3.25), λ_{ij} is a constant for $i = 1, 2, 3, \ldots$, 9, and $j = 1, 2$. Fears of crimes against property and fears of crimes against the person are represented by the exogenous latent variables ξ_1 and ξ_1. The term δ_i stands for all the exogenous variables influencing x_i so that

$$E(\xi_i \delta_j) = 0 \text{ for } i = 1, 2, \text{ and } j = 1, 2, 3, \ldots, 9$$

Terms x_1 through x_9 denote manifest variables ranging over ratings, on ten-point scales, of fears of various crimes (Ferraro and LaGrange 1992, table 1):

1. Breaking into a person's home while the person is there
2. Breaking into a person's home while the person is away
3. Rape or sexual assault
4. Murder
5. Attacking someone with a weapon
6. Stealing someone's car
7. Robbing or mugging someone on the street
8. Damaging another person's property
9. Cheating, conning, or swindling someone out of their money

Explication

Model (8.10–21) expresses ratings of fears of various offenses against the person and ratings of fears of various offenses against property as linear functions of different latent variables. Just two such variables are postulated for the domains of those functions (cf. Grossman 1986, 28). The model would be false for the population of adults in the United States in 1990 if it were an incomplete model of the state of affairs in that population. Whether model (8.10–21) is incomplete for adults in the United States in 1990 was decided by testing the hypothesis that

$$\operatorname*{plim}_{N \to \infty} F(\theta) \neq 0$$

for the model in said population, where $F(\theta)$ is defined as for (6.1). This hypothesis is referred to as H_1. The alternative hypothesis, $\sim H_1$, is that

$$\operatorname*{plim}_{N \to \infty} F(\theta) = 0$$

in the population of adults in the United States.

Under $\sim H_1$, the sampling distribution of the quantity

$$2(N - 1)F(\theta) \tag{8.22}$$

is chi-square with $\frac{1}{2}[(p)(p + 1)] - t$ degrees of freedom in large, simple random samples. Substituting F_{ML} for $F(\theta)$ in equation (8.22) yields

$$2(N - 1)F_{ML}, \tag{8.23}$$

where F_{ML} is the value of the confirmatory maximum likelihood discrepancy function (cf. Jöreskog 1969, 1973). The quantity (8.23) is equivalent to (8.22) for models with multivariate normal manifest variables (Jöreskog and Sörbom 1989, 19; Browne 1982, 80-89; Hayduk 1987, 134-135). So, the value of (8.23) could be used to test H_1 under the assumption that x_1 through x_1 were multivariate normal. No information was available concerning the distributional characteristics of the manifest variables, but there does not seem to be anything in the pertinent scholarly literature to deny that x_1 through x_1 have a normal multivariate distribution (cf. Hayduk 1987, 134-35). A maximum of .1 was considered to be acceptable for the probability of rejecting $\sim H_1$ when it is actually true (cf. Hayduk 1987, 161).

Ratings x_1 and x_1 were both obtained by survey items referring to the breaking and entering of one's home, and ratings x_1, x_1, and x_1, were all obtained by items referring to more than one crime. It is conceivable that these ratings were affected by the similarities in the formulation of the survey items by which they were obtained. This possibility is accommodated by the eight variable terms $E(\delta_1\delta_1)$, $E(\delta_1\delta_1)$, $E(\delta_1\delta_1)$, $E(\delta_1\delta_1)$, $E(\delta_1\delta_1)$, $E(\delta_1\delta_1)$, $E(\delta_1\delta_1)$, and $E(\delta_1\delta_1)$ in equation (8.21) of model (8.10-21). Let H_1 be the hypothesis that a model incorporating any one these terms is not unsound for the population of adults in the United States in 1990. The alternative hypothesis, $\sim H_1$, is that a model incorporating any one of the eight terms is unsound for that population. Let θ be an element of the set comprising $E(\delta_1\delta_1)$, $E(\delta_1\delta_1)$, $E(\delta_1\delta_1)$, $E(\delta_1\delta_1)$, $E(\delta_1\delta_1)$, $E(\delta_1\delta_1)$, $E(\delta_1\delta_1)$, and $E(\delta_1\delta_1)$. Let $\hat{\theta}$, $AVAR(\hat{\theta}_N)$, and $avar(\hat{\theta}_N)$ be defined as they are for (6.3). Under $\sim H_1$,

$$(8.24) \qquad \frac{\hat{\theta}}{\sqrt{\mathrm{avar}(\hat{\theta}_N)}}$$

will be, asymptotically, a standard normal variate, in large samples, if $\hat{\theta}$ and $\mathrm{avar}(\hat{\theta}_N)$ are consistent estimates (Browne 1982, 95). Confirmatory maximum likelihood estimates of θ and of $\mathrm{AVAR}(\hat{\theta}_N)$ will be consistent if they are based on simple random samples and the variables x_1 through x_9 are multivariate normal (Bollen 1989, 108). A maximum of .05 seemed to be acceptable for the probability of being in error in rejecting $\sim H_1$ for $\theta = E(\delta_3\delta_7)$, $E(\delta_7\delta_3)$, $E(\delta_3\delta_9)$, $E(\delta_9\delta_3)$, $E(\delta_7\delta_9)$, or $E(\delta_9\delta_7)$.

Identification and Estimation

Model (8.10-21) would be identified under Kenneth A. Bollen's three indicator rule if the terms λ_{41}, λ_{42}, λ_{71}, λ_{72}, $E(\delta_4\delta_1)$, and $E(\delta_7\delta_1)$ were identified (Bollen 1989, 244). These terms are identified because the following statements can be shown to follow from equations (8.10) through (8.21):

$$\lambda_{42} = \sqrt{\frac{E(x_3x_4)E(x_5x_4)}{E(x_5x_3)}}$$

$$\lambda_{61} = \sqrt{\frac{E(x_6x_1)E(x_6x_3)}{E(x_3x_1)}}$$

$$\lambda_{81} = \frac{E(x_8x_6)}{\lambda_{61}}$$

$$E(\xi_2\xi_1) = \frac{\left[\sqrt{\frac{E(x_6x_1)E(x_6x_3)E(x_4x_3)E(x_5x_4)}{E(x_3x_1)E(x_5x_3)}}\right] E(x_8x_3)}{E(x_8x_6)E(x_4x_3)}$$

$$\lambda_{21} = \frac{\lambda_{81}E(x_4x_2) - \lambda_{42}E(x_8x_2)}{\lambda_{42}\lambda_{81}[E(\xi_2\xi_1)^2 + 1]}$$

$$\lambda_{22} = \frac{E(x_8x_2) - \lambda_{21}\lambda_{81}}{\lambda_{81}E(\xi_2\xi_1)}$$

$$\lambda_{32} = \frac{E(x_4x_3)}{\lambda_{42}}$$

$$\lambda_{52} = \frac{E(x_5x_3)}{\lambda_{32}}$$

$$\lambda_{71} = \frac{E(x_7x_5) - \lambda_{52}\lambda_{72}}{\lambda_{52}E(\xi_2\xi_1)}$$

$$\lambda_{72} = \frac{E(x_8x_7) - \lambda_{71}\lambda_{81}}{\lambda_{81}E(\xi_2\xi_1)}$$

$$\lambda_{11} = \frac{E(x_6x_1)}{\lambda_{61}}$$

$$E(\delta_2\delta_1) = E(x_2x_1) - \lambda_{11}\lambda_{21} - \lambda_{11}\lambda_{22}E(\xi_2\xi_1)$$

$$E(\delta_7\delta_3) = E(x_7x_3) - \lambda_{32}\lambda_{72} - \lambda_{32}\lambda_{71}E(\xi_2\xi_1)$$

$$\lambda_{91} = \frac{E(x_9x_8)}{\lambda_{81}}$$

$$E(\delta_9\delta_3) = E(x_9x_3) - \lambda_{91}\lambda_{32}E(\xi_2\xi_1)$$

$$E(\delta_9\delta_7) = E(x_9x_7) - \lambda_{91}\lambda_{71} - \lambda_{91}\lambda_{72}E(\xi_2\xi_1)$$

To estimate the unknowns of model (8.10-21) for the population of adults in the United States in 1990, the confirmatory maximum likelihood method was applied to the data in table 7-1. These data were not obtained from a simple random sample, but from the remainder of such a sample after missing data were deleted list-wise across twenty-one variables. According to Ferraro and LaGrange the reduced sample "approximates the . . . population across several key variables," though it "has a somewhat higher proportion of metropolitan residents" (Ferraro and LaGrange 1992, S236). This discrepancy would only be important for the purposes of estimating (8.23), θ, and AVAR($\hat{\theta}_{N}$) if residing in a metropolitan area systematically influenced the manifest variables of the model other than by way of the latent exogenous variables (Rubin 1976; Marini, Olsen, and Rubin 1979). That possibility seems unlikely in the case of the present model.

Results

Table 8-3 has the absolute values of (8.24) calculated from the confirmatory maximum likelihood estimates that were obtained based on the data in table 7-1. The table also gives the likelihoods of these values in the distribution of a standard normal variate. None of the values has a likelihood of less than .05. Therefore, if the conditions are fulfilled under which confirmatory maximum likelihood estimates of θ and of AVAR($\hat{\theta}_{N}$) will be consistent, $\sim H_1$ can be retained for θ = E($\delta_j\delta_7$), E($\delta_7\delta_j$), E($\delta_j\delta_i$), E($\delta_i\delta_j$), E($\delta_7\delta_i$), and E($\delta_i\delta_7$). Retaining $\sim H_1$ for those values of θ implies that the ratings x_j, x_7, and x_i are not affected by the similarities in the formulation of the survey items by which they were obtained. So, in allowing for that eventuality by including the terms E($\delta_j\delta_7$), E($\delta_7\delta_j$), E($\delta_j\delta_i$), E($\delta_i\delta_j$), E($\delta_7\delta_i$), and E($\delta_i\delta_7$), model (8.10-21) may be an unsound model of the state of affairs in the population of adults in the United States. To take that

Table 8-3. Absolute Values of (8.24) for θ = $E(\delta_1\delta_1)$, $E(\delta_1\delta_1)$, $E(\delta_1\delta_1)$, $E(\delta_1\delta_1)$, $E(\delta_1\delta_1)$, and $E(\delta_1\delta_1)$, Possible Significance of θ, and Probabilities in a Standard Normal Sampling Distribution, *Fear of Crime in America Survey* sample (N = 1,089), Confirmatory Maximum Likelihood Estimates from Pearson Correlation Coefficients, List-wise Deletion

θ	Possible Significance	Absolute Value of (8.24)	Probability
$E(\delta_1\delta_1)$ and $E(\delta_1\delta_1)$	Joint moments of Miscellaneous Variables Affecting x_1 and x_1	0.52	.60
$E(\delta_1\delta_1)$ and $E(\delta_1\delta_1)$	Joint moments of Miscellaneous Variables Affecting x_1 and x_1	0.32	.75
$E(\delta_1\delta_1)$ and $E(\delta_1\delta_1)$	Joint moments of Miscellaneous Variables Affecting x_1 and x_1	1.80	.07

possibility into account, I re-estimated the model subject to the following specification:

$$E(\delta_3\delta_7) = E(\delta_7\delta_3) = E(\delta_3\delta_9) =$$
$$= E(\delta_9\delta_3) = E(\delta_7\delta_9) = E(\delta_9\delta_7) = 0$$

The value of the quantity (8.23) for the revised model, model (8.10–21′), was 233.54. That value has a likelihood of less than 9.9×10^{-14} in the sampling distribution of chi-square with twenty-three degrees of freedom (SYSTAT for Windows Version 5, distribution functions). Hypothesis $\sim H_1$ may thus be rejected in favour of H_1. That decision would imply that the ratings of fears of the offenses against the person and the ratings of fears of the offenses against property are not adequately represented as linear functions of just two latent variables.

Table 8-4 shows the differences between the correlations among the manifest variables observed in the sample and those implied by the model, standardized in relation to the square roots of their asymptotic variances (cf. Jöreskog 1981, 91). These statistics are standard normal variates for simple random samples of more than one hundred cases, and for models with multivariate normal manifest variables (Hayduk 1987, 170). Therefore, absolute values over 1.96 would indicate discrepancies between the model and reality that would be too large to be attributed to sampling fluctuations with only a 5 percent probability of error (Herting and Costner 1985, 333). Much of the information in table 8-4 can be covered

Table 8-4. Standardized Residuals for Model (8.10-21′), Adults in the United States in 1990 (N = 1,089), Confirmatory Maximum Likelihood Estimates from Pearson Correlation Coefficients, List-wise Deletion

	Fear of Break-ins at Home While There	Fear of Break-ins at Home While Away
Fear of Breaks-in at Home While There	-	
Fear of Breaks-in at Home While Away	3.76	-
Fear of Rape or Sexual Assault	8.58	4.18
Fear of Murder	1.64	0.39
Fear of Armed Attack	0.02	4.88
Fear of Car Theft	-2.88	-1.17
Fear of Robbery	-4.06	-4.17
Fear of Vandalism	-0.59	0.16
Fear of Fraud	4.00	2.68

Table 8-4. *Continued.*

	Fear of Rape or Sexual Assault	Fear of Murder	Fear of Armed Attack	Fear of Car Theft	Fear of Robbery
Fear of Rape or Sexual Assault	-				
Fear of Murder	2.64	-			
Fear of Armed Attack	-7.09	3.25	-		
Fear of Car Theft	-5.28	-5.26	1.75	-	
Fear of Robbery	-0.40	-5.46	7.52	2.13	-
Fear of Vandalism	-2.29	-4.22	0.49	1.09	1.51
Fear of Fraud	0.64	1.61	0.92	-0.44	-0.94

Table 8-4. *Continued.*

	Fear of Vandalism	Fear of Fraud
Fear of Vandalism	-	
Fear of Fraud	-0.97	-

by saying that several standardized residuals for fears of rape or sexual assault and for fears of murder are especially large.

Being Especially Afraid of Crime as a Sufficient Explanation for Women Being Especially Likely to Feel Unsafe While Out Alone at Night

A moment structure model was devised to examine the possibility that women are especially likely to feel unsafe while out alone in their neighbourhoods at night solely because they are especially afraid of several types of criminal victimization. The model was tested for its correspondence with the facts of the population of adults in England and Wales in 1984.

Model Specification

The model that was tested is defined by these equations:

(8.25)
$$y = \begin{bmatrix}\gamma_1 & \gamma_2 & \gamma_3 & \cdots & \gamma_6\end{bmatrix}\begin{bmatrix}x_1\\x_2\\x_3\\.\\.\\.\\x_6\end{bmatrix} + \zeta$$

(8.26)
$$E(y) = E(x_1) = E(x_2) = E(x_3) = \ldots = E(x_6) = E(\zeta) = 0$$

(8.27)
$$\gamma_6 = 0$$

In the equations, the term γ_i is a constant for $i = 1, 2, 3, \ldots, 6$. The manifest, endogenous variable y represents feeling unsafe out alone in the vicinity of one's homes after dark. The manifest, exogenous variables x_1 through x_5 represent fears of being burgled, fears of being robbed, fears of property vandalization, fears of being assaulted, and fears of being raped. The probability of a survey respondent's sex being recorded as female is represented by x_1. The latent, exogenous variable ζ represents all of the conditions determining y so that

$$E(x_i\zeta) = 0 \text{ for } i = 1, 2, 3, \ldots, 6.$$

The moment structure model derivable from equations (8.25) through (8.27) is referred to as *model (8.25-27).*

Explication

According to model (8.25-27), feelings of not being safe while out alone at night do not vary as a linear function of the probability of being female if the variations associated with differences in fear of crime are taken into account. Whether the model corresponded with the facts of the population of English and Welsh adults in 1984 was decided by seeing whether it provided a complete representation of the state of affairs in that population. The completeness of model (8.25-27) was evaluated by testing the hypothesis that

$$\operatorname*{plim}_{N \to \infty} F(\theta) \neq 0$$

for model (8.25-27) for adults in England and Wales in 1984, where $F(\theta)$ is defined as for (6.1). This hypothesis, which is referred to as H_1 would be false if the model was complete. The alternative to H_1 is $\sim H_1$, according to which

$$\operatorname*{plim}_{N \to \infty} F(\theta) = 0$$

for model (8.25-27) among adults in England and Wales in 1984. Under $\sim H_1$, the quantity

$$2(N - 1)F(\theta) \tag{8.28}$$

has a sampling distribution that is chi-square with one degree of freedom in large, simple random samples. This property of (8.28) was used in testing H_1. A maximum of .1 seemed to be acceptable for the probability of rejecting $\sim H_1$ when it was actually true (Hayduk 1987, 161).

Identification and Estimation

Model (8.25-27) is identified under Bollen's "Null B" rule (Bollen 1989, 94). Therefore, the model is estimable.

Estimates for model (8.25-27) were obtained based on statistics for a sub-group of the 1984 *British Crime Surveys* sample (Principal Investigator, Home Office Research and Planning Unit 1987a). The sub-group consisted of 5,037 of the 11,030 individuals covered by the data in the file BCS84.RAW. These 5,037 individuals were selected by first choosing 5,520 at random, and then deleting the 483 of these that had missing data on the variable y, or on any of the variables x_1 through x_6. The remaining 5,037 individuals would be equivalent to a random sample of the adults in England and Wales in 1984 for the purpose of estimating model (8.25-27) provided one condition is fulfilled. This condition is that the factors determining which individuals were among the 5,037 do not affect y independently of x_1, x_2, x_3, x_4, x_5, and x_6.

The statistics for the 5,037 individuals that were used in estimating the unknown terms of model (8.25-27) were the second-, and fourth-order moments of y and x_1 through x_6. The values of these statistics were estimated from the individuals' responses to the questions they were asked concerning how safe they felt walking alone in their neighbourhoods after dark, and how worried they were about various criminal victimizations. The responses constitute discrete variables ranging over quite small sets of ordered categories, whereas the variables y and x_1 through x_6 are presumably continuous. The discrete variables can provide, at best, only indirect measures of the continuous variables, and values for the statistical moments of continuous variables based on indirect measures ranging over restricted sets of ordered categories tend to be biased downwards (Jöreskog and Sörbom 1988, p. 1-9). One response to this problem is to estimate the threshold values of the latent, continuous variables corresponding to the categories of the observed, discrete variables, and then to calculate the statistical moments of the sets of estimated thresholds (Bollen 1989, 439-4; Muthén 1983, 44-46). A procedure for estimating the threshold values from the distribution of cases across a set of categories is to postulate a standard normal distribution for the underlying variable, and to take the normal scores of the cases (Jöreskog and Sörbom 1988, pp. 1-4 - 1-5). Estimating the statistical moments of continuous variables based on the normal scores for the cases in each category of a discrete variable is a procedure that is not always entirely ineffective (cf. Jöreskog and Sörbom 1988, p. 1-9; Jöreskog and Sörbom 1989, 226-27). So, normal scores were assigned to the 5,037 individuals for the variables y and x_4 through x_5 using the DOS-PRELIS 1.20 computer program (DOS-PRELIS Version 1.20), and then those scores were used to estimate the second-, and fourth-order moments of y and x_1 through x_4. The asymptotic distribution-free method of weighted least squares was applied to the estimates of those statistical moments in estimating model (8.25-27) (cf. Bollen 1989, 425-429; Browne 1982, 86-89; Jöreskog and Sörbom 1989, 19-21).

Results

The weighted least squares estimate of (8.28) for the 5,037 cases was 295.96. This value has a probability of 9.992×10^{-15} in the sampling distribution of chi-square with twenty-three degrees of freedom (SYSTAT for Windows Version 5, distribution functions). Thus, $\sim H_5$ may be rejected in favour of H_1. To do so would be to concede that feelings of not being safe vary as a linear function of the probability of being female even when the variations associated with differences in fear of crime are taken into account.

Findings Concerning Perceived Risks of Criminal Victimization

The Distinction between Perceived Risks of Crimes against Property and Perceived Risks of Crimes against the Person

If perceived risks of crimes against property differ from perceived risks of crimes against the person, then perceived risks of burglary, car theft, and vandalism must derive from a different state of mind than the one from which perceived risks of murder, assault, and rape derive. This reasoning informed the devising of a moment structure model for examining whether Ferraro and LaGrange (1992, S238–39) are right in claiming that the distinction between perceived risks of crimes against property and perceived risks of crimes against the person corresponds with the facts. The model was then tested for its agreement with the facts concerning the population of adults in the United States in 1990.

Model Specification

The model that was devised is model (8.10–21″). Model (8.10–21″) is the model defined by equations (8.10) through (8.21) when x_i' is substituted for

x_i, ξ_j' for ξ_j, and ζ_i' for ζ_i, for $i = 1, 2, 3, \ldots, 9$ and $j = 1, 2$. The terms x_1' through x_9' are ratings out of ten of the chances of being subjected to the following crimes:

1. A break-in at home while there
2. A break-in at home while away
3. Rape or sexual assault
4. Murder
5. An armed attack
6. The theft of a car
7. A robbery or mugging
8. Vandalization of property
9. Fraud

Terms ξ_1' and ξ_2' of model (8.10-21″) are the perceived risk of crimes against property and the perceived risk of crimes against the person. The term ζ_i' represents all of the variables on which x_i' depends so that

$$E(\xi_j'\delta_i') = 0 \text{ for } i = 1, 2, 3, \ldots, 9, \text{ and } j = 1, 2.$$

Explication

In model (8.10-21″), ratings of the perceived risk of various crimes against property and ratings of the perceived risk of various crimes against the person are represented as linear functions of different latent variables. Just two such variables are shown as constituting the domains of those functions (cf. Grossman 1986, 28). The model would not agree with the facts about the population of adults in the United States in 1990 if its representation of those facts were incomplete. This possibility was examined by testing the hypothesis that

$$\operatorname*{plim}_{N \to \infty} F(\theta) \neq 0$$

for adults in the United States in 1990, where $F(\theta)$ is defined as for (6.1). This hypothesis is referred to as H_f. It was tested using the quantity (8.23) according to the same principles as those by which H_1 was tested. In testing H_1, a probability of .1 was deemed to be acceptable for the probability of error in rejecting the alternative hypothesis, $\sim H_1$ (cf. Hayduk 1987, 161), according to which

$$\operatorname*{plim}_{N \to \infty} F(\theta) = 0$$

for adults in the United States in 1990

Model (8.10-21″) accommodates the possibility that the ratings x_1' and x_1 were affected by their having both been obtained by survey items referring to the breaking and entering of one's home. The model also accommodates the possibility that the ratings x_3, x_1, and x_4 were affected by their having all been obtained by items referring to more than one crime. These possibilities are accommodated by the incorporation of the eight variable terms $E(\delta\delta)$, $E(\delta\delta)$, $E(\delta\delta)$, $E(\delta\delta)$, $E(\delta\delta)$, $E(\delta\delta)$, $E(\delta\delta)$, and $E(\delta\delta)$ in equation (8.21) of model (8.10-21″). The expression H denotes the hypothesis that a model incorporating any one these terms is not unsound for the population of adults in the United States in 1990. The alternative hypothesis, that a model incorporating any one of the eight terms is unsound for adults in the United States in 1990 is denoted by the expression $\sim H$. If θ ranges over $E(\delta\delta)$, $E(\delta\delta)$, $E(\delta\delta)$, $E(\delta\delta)$, $E(\delta\delta)$, $E(\delta\delta)$, $E(\delta\delta)$, and $E(\delta\delta)$, and $\hat{\theta}$, AVAR$(\hat{\theta}_N)$, and avar$(\hat{\theta}_N)$ are defined as they are for (6.3), then, under $\sim H$, the sampling distribution of (8.24) is known under certain circumstances. The distribution is, asymptotically, standard normal, if large samples are drawn, and if $\hat{\theta}$ and avar$(\hat{\theta}_N)$ are consistent estimates of θ and AVAR$(\hat{\theta}_N)$ (Browne 1982, 95). A maximum of .05 was considered to be acceptable for the probability of mistakenly rejecting $\sim H$ for θ = $E(\delta\delta)$, $E(\delta\delta)$, $E(\delta\delta)$, $E(\delta\delta)$, $E(\delta\delta)$, or $E(\delta\delta)$.

Identification and Estimation

Model (8.10-21″) is identified because model (8.10-21) is identified. The confirmatory maximum likelihood method (Jöreskog 1969, 1973) was applied to the data in table 7-2 in order to estimate model (8.10-21″) for the adult population of the United States in 1990.

Results

The absolute value of (8.24), based on the confirmatory maximum likelihood estimates of θ and $\mathrm{AVAR}(\hat{\theta}_N)$ from the *Fear or Crime in America Survey* data, was 1.096 for $\theta = E(\delta_3\delta_9)$ and $\theta = E(\delta_9\delta_3)$. For $\theta = E(\delta_7\delta_9)$ and $\theta = E(\delta_9\delta_7)$, the absolute value of (8.24) was 0.678. The probabilities of absolute values as large as 1.096 and 0.678 in the distributions of standard normal variates are .274 and .498 (SYSTAT for Windows Version 5, distribution functions). So, provided that the confirmatory maximum likelihood estimates of θ and $\mathrm{AVAR}(\hat{\theta}_N)$ were consistent, there was no reason to reject $\sim H_0$ for any of the four terms $E(\delta_3\delta_9)$, $E(\delta_9\delta_3)$, $E(\delta_7\delta_9)$, and $E(\delta_9\delta_7)$. Retaining $\sim H_0$ for these four terms implies that the two pairs of ratings x_3 and x_9 and x_7 and x_9 were not affected by their having been obtained by survey items referring to more than one crime. Therefore, a model of the population of adults in the United States in 1990 that accommodates that eventuality by including the four terms $E(\delta_3\delta_9)$, $E(\delta_9\delta_3)$, $E(\delta_7\delta_9)$, and $E(\delta_9\delta_7)$ might be unsound. Model (8.10–21″) was re-specified for that population, as follows:

$$E(\delta_3\delta_9) = E(\delta_9\delta_3) = E(\delta_7\delta_9) = E(\delta_9\delta_7) = 0. \tag{8.29}$$

Model (8.10–21″) was re-estimated subject to (8.29).

For the revised model, model (8.10-21‴), the estimated value of (8.23) was 215.5 with twenty-two degrees of freedom. In the distribution of a chi-square variate with as many degrees of freedom, the likelihood of a value of 215.5 is less than 9.9×10^{-11} (SYSTAT for Windows Version 5, distribution functions). Hypothesis $\sim H_1$ may therefore be rejected. Hypothesis H_1 may be retained. Retaining H_1 would imply that the ratings of the risk of the offenses against the person and the ratings of the risk of the offenses against property are not adequately represented as linear functions of just two latent variables.

Perceived Risks of Criminal Victimization among Elderly People

The possibility that the perceived risks of being robbed and of being raped are greater for elderly people than they are for younger folks was examined for the population of adults in England and Wales in 1984. This was done by means of the moment structure model defined by equations (8.30) and (8.31). This model is referred to as *model (8.30-31)*.

Model Specification

(8.30)
$$\begin{bmatrix} y_1 \\ y_2 \end{bmatrix} = \begin{bmatrix} \gamma_1 \\ \gamma_2 \end{bmatrix} x + \begin{bmatrix} \zeta_1 \\ \zeta_2 \end{bmatrix}$$

$$E(y_i) = E(x) = E(\zeta_i), \text{ for } i = 1, 2 \tag{8.31}$$

In these equations, the term γ_i is a constant for $i = 1, 2$. Terms y_1 and y_2 are variables ranging over perceived risks of being robbed, and perceived risks of being raped. The term x is a variable ranging over the probability after the fact of a person being observed to be elderly. The term ζ_i is a variable covering all of the factors affecting y_i so that

$$E(x\zeta_i) = 0, \text{ for } i = 1, 2.$$

Explication

According to the model, perceived risks of being robbed and of being raped vary according to whether a person is elderly. The effect that being elderly has on a person's perceived risk of being robbed is represented by the term γ_1. The term γ_2 represents the effect that being elderly has on a person's perceived risk of being raped. If the values of these two terms are positive, then the perceived risks of being robbed and of being raped might be higher for elderly people than they are for younger folk.

Identification and Estimation

Both γ_1 and γ_2 are identified under Bollen's "Null B" rule, so the terms are estimable. Estimates were obtained for the population of adults in England and Wales. To obtain the estimates, the method of weighted least squares (Bollen 1989, 425-429; Browne 1982, 86-89; Jöreskog and Sörbom 1989, 19-21) was applied to the estimated second- and fourth-order moments of y_1, y_2, and x. Those moments were estimated from the 1984 *British Crime Surveys* data in the file BCS84.RAW. In doing so, the survey participants' responses to the questions they were asked about the likelihoods of their being robbed or raped were taken as indicators of their values on y_1 and y_2. Normal scores were assigned to those responses following list-wise deletion of the cases with missing data on any of the variables y_1, y_2, and x. Given the procedures that were followed in estimating γ_1 and γ_2, the estimates obtained should be consistent provided they were based on consistent estimates of the fourth-order moments of y_1, y_2, and x.

Results

The number of cases remaining after deleting those missing data was 10,478. The values of γ_1 and γ_2, the terms representing the effects of being elderly on the perceived risks of being robbed and of being raped, were both negative. For γ_1, the estimated value was -0.032 with an asymptotic standard error of 0.025, and for γ_1, the estimated value was −0.060 with an asymptotic standard error of 0.021.

Findings Concerning Fear of Crime and Perceived Risks of Criminal Victimization

The possibility that women are especially likely to feel unsafe while out alone in their neighbourhoods at night solely because of their especially great fears, and perceived risks of criminal victimization was expressed in a moment structure model. The model is referred to as model (8.32-34).

Model Specification

Moment structure model (8.32-34) can be derived from the following equations:

$$y = \begin{bmatrix} \gamma_1 & \gamma_2 & \gamma_3 & \cdot & \cdot & \cdot & \gamma_{11} \end{bmatrix} \begin{bmatrix} x_1 \\ x_2 \\ x_3 \\ \cdot \\ \cdot \\ \cdot \\ x_{11} \end{bmatrix} + \zeta \qquad (8.32)$$

$$\text{(8.33)} \qquad \begin{aligned} E(y) &= E(x_1) = E(x_2) = E(x_3) \\ &= \ldots = E(x_{11}) = E(\zeta) = 0 \end{aligned}$$

$$\text{(8.34)} \qquad \gamma_{11} = 0$$

The term γ_i is a constant in these equations, for $i = 1, 2, 3, \ldots, 11$. Terms y and x_1 through x_5 are defined as they were for model (8.25–27). The terms x_6 through x_{10} represent perceptions of the likelihood of being subjected to a burglary, a robbery, a vandalization of property, an assault, and a rape in the next year. The probability after the fact of a person being female is represented by x_{11}. The latent, exogenous variable ζ represents all of the conditions determining y so that

$$E(x_i\zeta) = 0 \text{ for } i = 1, 2, 3, \ldots, 11.$$

Explication

Model (8.32–34) proposes that no difference in the magnitude of men's and women's feelings of insecurity is to be expected once the effects of differences in the magnitudes of their fears, and perceived risks of criminal victimization have been considered. Let H_1 denote the hypothesis that the model is not complete for the population of adults in England and

Wales in 1984, and let $\sim H_t$ denote the alternative hypothesis that the model is complete for the said population. Hypothesis H_t can be tested using the property of (8.22) by which it would be distributed as chi-square with one degree of freedom for large, simple random samples if $\sim H_t$ were true. A level of .1 seems reasonable for the maximum probability for error in rejecting $\sim H_t$ (cf. Hayduk 1987, 161)

Identification and Estimation

Model (8.32-34) is identified because models of its kind are always identified (cf. Bollen 1989, 96). The model was estimated for adults in England and Wales in 1984 by applying the weighted least squares technique (Bollen 1989, 425-429; Browne 1982, 86-89; Jöreskog and Sörbom 1989, 19-21) to estimates of the second-, and fourth-order moments of the variables y and x_1 through x_{11}. The estimates of the second-, and fourth-order moments of y and x_1 through x_{11} were made for the same 5,520 individuals as those who were chosen at random from the 1984 *British Crime Surveys* sample for the purpose of estimating model (8.25-27). Data in the file BCS84.RAW were used to obtain the estimates of the second-, and fourth-order moments of y and x_1 through x_{11} after the records for the individuals missing data had been eliminated list-wise. The 5,076 individuals whose records were not eliminated constitute a simple, random sample of the adults in England and Wales in 1984 for the purpose of estimating model (8.32-34) provided two conditions are fulfilled. The first condition is that the factors that determined the composition of the 1984

British Crime Surveys sample have no direct effect on y. The second condition is that any data on y and x_1 through x_{11} that are missing for members of the 1984 *British Crime Surveys* sample are missing completely at random (Marini, Olsen, and Rubin 1979, 316, 318).

Applying the weighted least squares technique to the estimated second-, and fourth-order moments of y and x_1 through x_{11} would have yielded a consistent estimate of (8.22) for model (8.32–34) if the estimates of the fourth-order moments were consistent. In making those estimates, the same procedures were used for assigning values on y and x_1 through x_3 as were used in the estimation of model (8.25–27). Values on x_4 through x_{11} were assigned based on the responses to the questions that respondents to the 1984 *British Crime Surveys* were asked concerning the likelihood of experiencing various crimes in the next year. Normal scores were determined for those responses and taken as estimates of values on x_4 through x_{11}. Given the procedures used to assign values on y and x_1 through x_{11} in estimating the fourth-order moments of y and x_1 through x_{11}, the estimates obtained will be consistent if two conditions were satisfied. One condition is that the 5,076 individuals for whom the estimates were made are equivalent to a simple random sample of the population, and the other condition is that y and x_1 through x_{11} are standard normal variates.

Results

The value of (8.22) for model (8.32–34) for the population of adults in England and Wales in 1984 was estimated to be 236.32. This value has a probability of less than 9.992×10^{-11} in the distribution of chi-square with one degree of freedom (SYSTAT for Windows Version 5, distribution functions). The hypothesis $\sim H_t$ was rejected, and the hypothesis H_t was retained. This decision implies that the magnitudes of men's and women's feelings of insecurity can be expected to differ even once the effects of differences in the magnitudes of their fears, and perceived risks of criminal victimization have been considered.

Findings Concerning Perceived Vulnerability to Crime

The Existence of Associations between Perceived Vulnerability to Crime and Feelings of Insecurity While Out Alone at Night

A moment structure model was written to ascertain the existence of associations between perceptions of being particularly highly-exposed to the risk of criminal victimization and not feeling safe while out alone in the neighbourhood at night. This model was estimated for the population of adults in England and Wales.

Model Specification

The model that was written is referred to as *model (8.35-36).* It is defined by these equations:

(8.35) $$y = \gamma_i x_i + \zeta, \text{ for } i = 1, 2$$

(8.36) $$E(y) = E(x_i) = E(\zeta) = 0, \text{ for } i = 1, 2$$

Here, the term γ_i is a constant for $i = 1, 2$. The terms y, x_1, x_2, and ζ are all variables. The variable y ranges over feelings of insecurity while out alone in the neighbourhood at night. The variable x_1 covers perceptions of being particularly exposed to the risk of criminal victimization due to being incapable of avoiding it. The variable x_2 ranges over perceptions of being particularly exposed to the risk of criminal victimization due to the neighbourhood being a place where crimes are especially likely to occur. The variable ζ covers all of the factors that affect y so that

$$E(x_i\zeta) = 0, \text{ for } i = 1, 2.$$

Explication

The model postulates a linear association between people's feelings of insecurity while out alone at night and their perceptions of being particularly exposed to the risk of criminal victimization. Whether the postulated association exists in the population of adults in England and Wales may be decided by testing soundness of the model for the said population. Let θ be an element of the set comprising γ_1 and γ_2 for the population of adults in England and Wales. Then, the hypothesis that model (8.35-36) is not unsound for that population may be formulated as the statement,

(8.37) $$\theta \neq 0, \text{ for } \theta = \gamma_1, \gamma_2.$$

The hypothesis expressed by (8.37) is referred to as H_1. The alternative hypothesis, referred to as $\sim H_1$, states that, in the population of adults in England and Wales,

$$\theta = 0, \text{ for } \theta = \gamma_1, \gamma_2.$$

Let $\hat{\theta}$, AVAR$(\hat{\theta}_N)$, and avar$(\hat{\theta}_N)$ be defined as they are for (6.3). Then, under $\sim H_1$, the sampling distribution of (8.24) will be, asymptotically, standard normal, if large samples are drawn, and if $\hat{\theta}$ and avar$(\hat{\theta}_N)$ are consistent estimates of θ and AVAR$(\hat{\theta}_N)$ (Browne 1982, 95). This property of (8.24) was used to corroborate H_1, and in doing so, a maximum of .05 for the probability of error in rejecting $\sim H_1$ was considered tolerable.

Identification and Estimation

Models like (8.35-36) are always identified (Bollen 1989, 96). The unknown terms of the model were estimated using values for the second-, and fourth-order moments of y, x_1, and x_1 that were based on the 1984 *British Crime Surveys* data in the file BCS84.RAW.

The values for the second-, and fourth-order moments of y, x_1, and x_1 were calculated based on the responses to four of the questions that were asked in the 1984 *British Crime Surveys*. The records for any of the survey participants for whom the response to any one of the four questions was missing were deleted, leaving records for 9,266 individuals. Normal scores were assigned to the responses to the question about feeling safe while walking alone in the neighbourhood at night, and these were taken as indicating values on y. Normal scores were also assigned to the responses to the query about how the respondent's chances of being mugged compared with those of other people in the vicinity, and these were taken as indicating values on x_1. The numbers given in response to the questions about how many houses in the vicinity would be burgled and how many people would be robbed were used to determine values on x_1 according to the formula,

$$x_2 = \ln[0.005 + (0.99 \times s)]. \tag{8.38}$$

The expression s in (8.38) denotes the scale formed by adding together the numbers given in response to the two questions (cf. DeVellis 1991, 9). The expression $\ln x$ denotes the natural logarithm of x. The formula (8.38) defines a normalizing transformation of s, which was found to be a leptokurtic, positively skewed variable (Hartwig and Dearing 1979, 59–60). The effectiveness of (8.38) as a normalizing transformation of s should be evident from comparing figures 8-1 and 8-2. The reliability of the scale s may be determined by the quantity

$$\left[\frac{n}{n-1}\right]\left[\frac{\sum_{i \neq j}^{n} E(z_i z_j)}{\sum_{i \neq j}^{n} E(z_i z_j) + \sum_{i=1}^{n} E(z_i z_i)}\right]. \tag{8.39}$$

The term n in (8.39) denotes the number of sets of responses used to form a scale, and z_i denotes one of those sets of responses, for any natural number i less than or equal to n (McDonald 1985, 216). The quantity (8.39) ranges in value between 0.0 and 1.0. For s, the quantity has a value of .756, which signifies a respectable level of reliability (DeVellis 1991, 85).

Model (8.35–36) was estimated from the values obtained for the second-, and fourth-order moments of y, x_1, and x_2 by the method of weighted least squares (cf. Bollen 1989, 425–429; Browne 1982, 86–89; Jöreskog and Sörbom 1989, 19–21). Estimates of (8.24) obtained by this method will be consistent if they are based on values for the fourth-order moments of y, x_1, and x_2 that are consistent estimates of the corresponding values in the population.

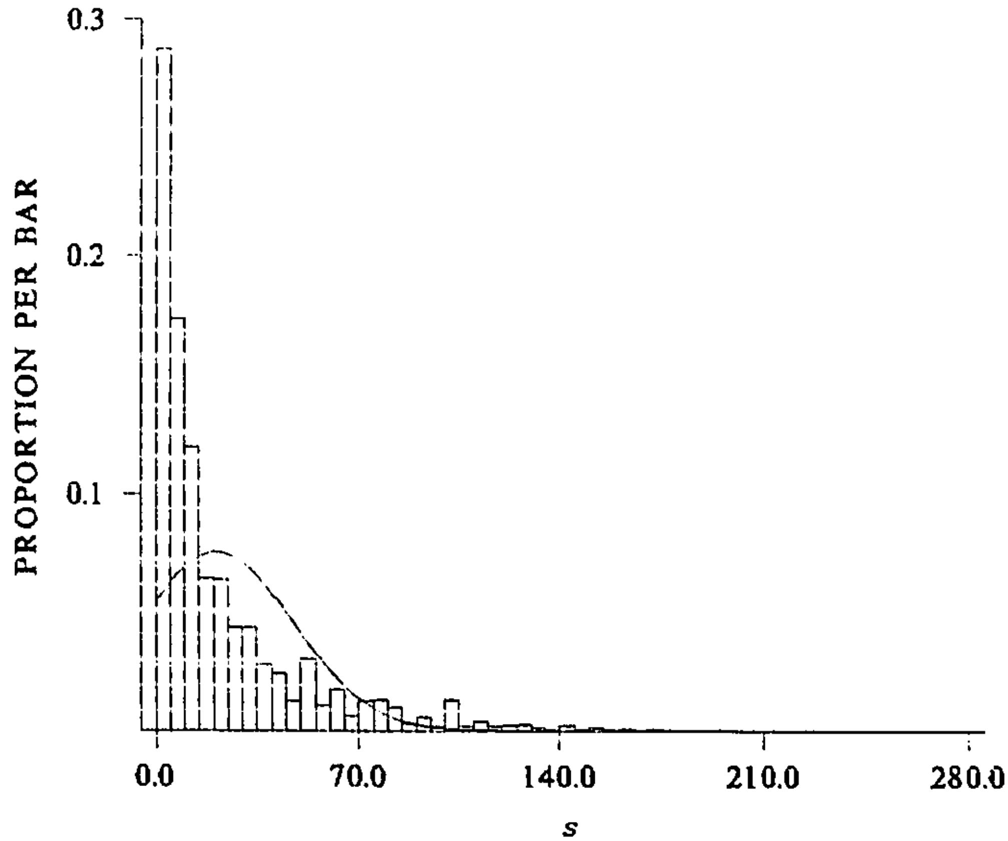

Fig. 8-1. Histogram for s for a sample of adults in England and Wales (N = 9,266), with the distribution of a true normal variable superimposed.

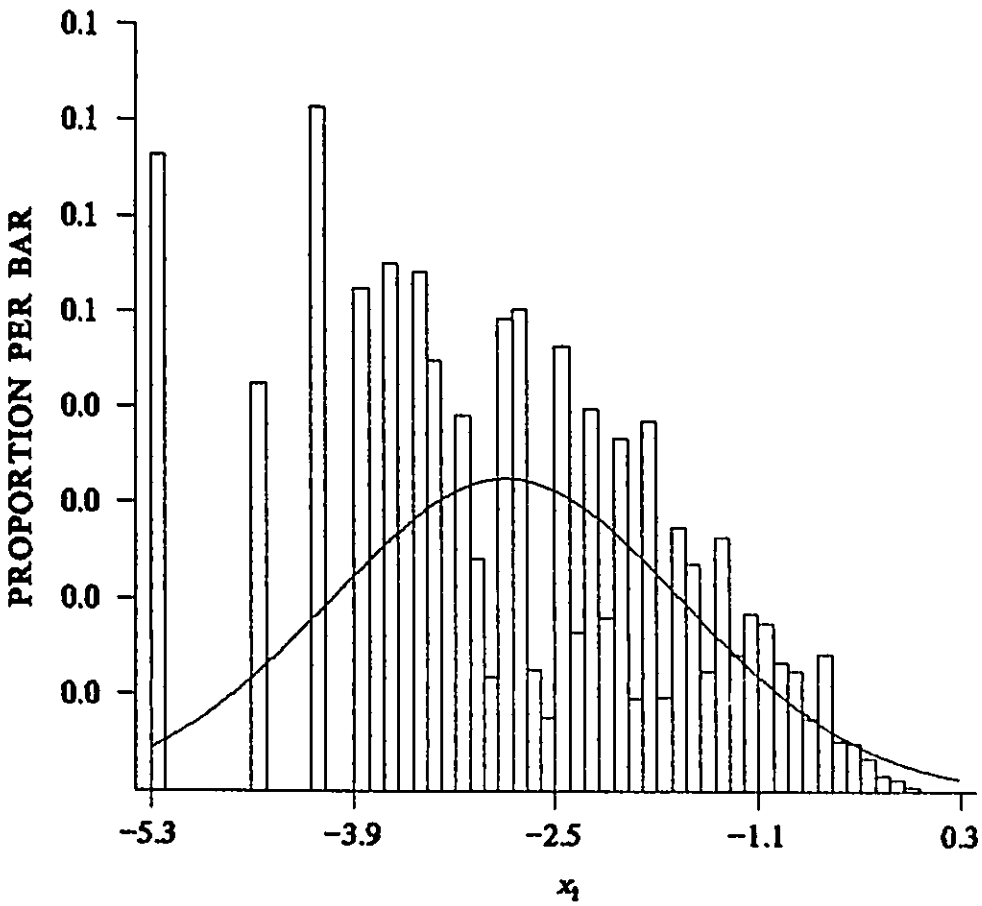

Fig. 8-2. Histogram for x_1 for a sample of adults in England and Wales (N = 9,266), with the distribution of a true normal variable superimposed.

Results

The estimate of (8.24) for $\theta = \gamma_1$ was 9.972, and for $\theta = \gamma_1$ it was 28.395. These values both have probabilities of less than 1.998×10^{-15} in the distribution of a standard normal variate, so $\sim H_1$ was rejected for both $\theta = \gamma_1$ and $\theta = \gamma_1$. The rejection of $\sim H_1$ is consistent with the existence of a linear association between feelings of insecurity while out alone at night and perceptions of being particularly exposed to the risk of criminal victimization.

The Perceived Vulnerability to Crime of Women and the Elderly Compared with That of Men and Younger Adults

Three moment structure models were devised for the purpose of examining whether perceived vulnerability to crime is greater among women and the elderly than it is among men and younger adults. The models were estimated for the population of adults in England and Wales based on data from the 1984 *British Crime Surveys*.

Model Specification

The models that were estimated are referred to as *model (8.40–41)*, *model (8.42–44)*, and *model (8.45–47)*. Model (8.40–41) is defined by these two equations:

(8.40) $$\begin{bmatrix} y_1 \\ y_2 \end{bmatrix} = \begin{bmatrix} \gamma_{1i} \\ \gamma_{2i} \end{bmatrix} x_i + \begin{bmatrix} \zeta_1 \\ \zeta_2 \end{bmatrix}, \text{ for } i = 1, 2$$

(8.41) $$E(y_i) = E(x_j) = E(\zeta_i) = 0, \text{ for } i, j = 1, 2$$

The term γ_{ji} of (8.40) denotes a constant, for i, j = 1, 2. The term y_1 represents the extent to which individuals perceive themselves to be particularly exposed to the risk of criminal victimization because of the their own inability to avoid being victimized. The extent to which individuals perceive themselves to be particularly exposed to the risk of criminal victimization due to their neighbourhoods being places where crimes are especially likely to happen is represented by the term y_1 in (8.40) and (8.41). The term x_1 is a variable ranging over the after the fact probability of a person being a woman, and the term x_1 is a variable ranging over the after the fact probability of a person being elderly. The term ζ_i is a variable covering all of the factors affecting y_i so that

$$E(x_j\zeta_i) = 0, \text{ for } i, j = 1, 2.$$

Model (8.42–44) is defined by (8.42) through (8.44):

(8.42) $$y^g = \gamma_i^g x_i^g + \zeta^g, \text{ for } i = 1, 2, 3, \ldots, 6, \text{ and } g = 1, 2$$

(8.43) $$\gamma_i^1 = \gamma_i^2 \text{ for } i = 1, 2, 3, \ldots, 6$$

(8.44) $$E(y^g) = E(x_i^g) = E(\zeta^g) = 0, \text{ for } i = 1, 2, 3, \ldots, 6, \text{ and } g = 1, 2$$

Model (8.45-47) is derivable from equations (8.45) through (8.47):

(8.45) $$y^g = \gamma_i^g x_i^g + \zeta^g, \text{ for } i = 1, 2, 3, \ldots, 7, \text{ and } g = 3, 4$$

(8.46) $$\gamma_i^3 = \gamma_i^4 \text{ for } i = 1, 2, 3, \ldots, 7$$

(8.47) $$E(y^g) = E(x_i^g) = E(\zeta^g) = 0, \text{ for } i = 1, 2, 3, \ldots, 7, \text{ and } g = 3, 4$$

In equations (8.42) through (8.47), the variable g is a natural number assigned to all persons in a certain sex or age category. All males were assigned the number *1*, and all females were assigned the number *2*. The number *3* was assigned to people who were younger than sixty-five years of age, and the number *4* was assigned to people who were sixty-five years of age or older. The term γ_i^g in equations (8.42) through (8.47) is a constant, where i = 1, 2, 3, . . ., 6, for g = 1, 2, and i = 1, 2, 3, . . ., 7, for g = 3, 4. The term y^g stands for how unsafe people feel while out alone in their neighbourhoods at night. The term x_1^g represents the extent to which people perceive themselves to be particularly exposed to the risk of criminal victimization because of their inability to avoid being victimized. The term x_2^g represents the extent to which people perceive themselves to be particularly exposed to the risk of criminal victimization due to their neighbourhoods being places where crimes are especially likely to happen. The terms x_3^g through x_7^g stand for perceived risks of the following criminal victimizations:

1. Having one's home or property damaged by vandals
2. Being mugged or robbed
3. Being attacked by strangers
4. Having one's home broken into and something taken
5. Being raped

The term ζ^g represents all of the variables associated with y^g so that

$$E(x_i^g \zeta^g) = 0,$$

where $i = 1, 2, 3, \ldots, 6$, for $g = 1, 2$,

and $i = 1, 2, 3, \ldots, 7$, for $g = 3, 4$.

Explication

Model (8.40-41) proposes that the extent to which individuals perceive themselves to be particularly exposed to the risk of criminal victimization varies depending on whether they are male or female, and depending on whether they are elderly. Whether model (8.40-41) is a sound model of the state of affairs in the population of adults in England and Wales in 1984 may be decided by testing hypothesis H_t. Hypothesis H_t states that

$$\theta \neq 0 \qquad (8.48)$$

in said population, where θ is γ_{ij} of model (8.40-41), for $i, j = 1, 2$. The alternative to this hypothesis is hypothesis $\sim H_t$, according to which

$$\theta = 0$$

for adults in England and Wales in 1984. If the terms $\hat{\theta}$, AVAR($\hat{\theta}_{\gamma}$), and avar($\hat{\theta}_{\gamma}$) are defined as they are for (6.3), and $\sim H_1$ is true, then the sampling distribution of (8.24) will be, asymptotically, standard normal under certain conditions. Those conditions are that large samples are drawn, and that the values of $\hat{\theta}$ and avar($\hat{\theta}_{\gamma}$) are consistent estimates of θ and AVAR($\hat{\theta}_{\gamma}$) (Browne 1982, 95). That the sampling distribution of (8.24) is known under specifiable conditions when $\sim H_1$ is true made it possible to corroborate H_1. A maximum of .05 for the probability of retaining H_1 when $\sim H_1$ is true was considered acceptable.

Model (8.42–44) proposes that variations in the perceived threat of criminal victimization have no more effect on women's senses of security than they have on men's. Model (8.45–47) proposes that such variations have no more effect on elderly peoples' senses of security than they have on younger peoples'. If the models are accurate, then men and women, and elderly people and younger adults may be equally averse to the threat of criminal victimization. That state of affairs may exist because men and women and elderly and younger people do not differ in their perceived likelihoods of suffering serious consequences if criminally victimized.

Whether models (8.42–44) and (8.45–47) are accurate as models of the state of affairs in the population of adults in England and Wales in 1984 was ascertained by testing their completeness for that population. The possibility that (8.42–44) and (8.45–47) are incomplete is expressed by hypothesis H_1, which states that

$$\operatorname*{plim}_{N \to \infty} F(\theta) \neq 0$$

for the two models for adults in England and Wales in 1984. Hypothesis H_1 was tested based on the principle that, under the alternative hypothesis, $\sim H_1$, according to which

$$\operatorname*{plim}_{N \to \infty} F(\theta) = 0$$

for adults in England and Wales in 1984, the sampling distribution of (8.22) is a chi-square variate for large, simple random samples. In testing H_1, .1 was thought to be an acceptable maximum for the probability of mistakenly rejecting $\sim H_1$ (cf. Hayduk 1987, 161).

Identification and Estimation

Models (8.40-41), (8.42-44), and (45-47) are of a kind that is always identified (cf. Bollen 1989, 96). So, the three models could be estimated, which they were, using the 1984 *British Crime Surveys* data in the file BCS84.RAW.

The estimation was done by applying the asymptotic distribution-free weighted least-squares method to estimates of the second-, and fourth order moments of the variables (8.40-41), (8.42-44) and (8.45-47) (cf. Bollen 1989, 425-429; Browne 1982, 86-89; Jöreskog and Sörbom 1989, 19-21). In making those estimates, the variables y_1 of (8.40-41) and x_1^f of (8.42-44) and (8.45-47) were measured using the survey participants' responses to the question about how their chances of being mugged compared with their neighbours'. Normal scores were assigned to those responses to estimate the second-, and fourth-order moments of the two variables. The variable y_1 of (8.40-41) and the variable x_1^f of (8.42-44) and (8.45-47) were measured by values of the quantity

$$\ln[0.005 + (0.99 \times s)]$$

of (8.38). Variables x_1^f through x_1^f of (8.42-44) and (8.45-47) were measured by normal scores that were assigned to the survey participants' answers to the questions about how likely they thought it was that various criminal victimizations would happen to them. Normal scores were also assigned to the responses to the question about feeling safe while out alone at night, and these scores were used to measure the variable y^f of (8.42-44) and (8.45-47).

Results

The estimates for (8.24) for various values of the term θ of (8.48) appear in table 8-5, along with the probabilities of the absolute values of the estimates in a standard normal distribution. The estimates are positive for $\theta = \gamma_{11}$, γ_{11}, and γ_{11}, but negative for $\theta = \gamma_{11}$. Based on the probabilities of the absolute values of the estimates, $\sim H_1$ can be rejected

Table 8-5. Estimates of (8.24) for Various Values of the Term θ of (8.48), Possible Significance of θ, Values of N for the Estimates, and Probabilities of the Absolute Values of the Estimates in a Standard Normal Distribution, Adults in England and Wales in 1984, Weighted Least Squares Estimates from Second-Order Moments

θ	Possible Significance of θ	N	Estimate of (8.24)	Probability of Absolute Value of Estimate
γ_{11}	Change in the Expected Value of y_1 Associated with Unit Increments in the Expected Value of x_1	10,669	14.758	1.998×10^{-15}
γ_{12}	Change in the Expected Value of y_1 Associated with Unit Increments in the Expected Value of x_1	10,597	6.312	2.749×10^{-10}

Table 8-5. *Continued.*

θ	Possible Significance of θ	N	Estimate of (8.24)	Probability of Absolute Value of Estimate
γ_{21}	Change in the Expected Value of y_1 Associated with Unit Increments in the Expected Value of x_1	9,403	12.984	1.998×10^{-15}
γ_{22}	Change in the Expected Value of y_1 Associated with Unit Increments in the Expected Value of x_1	9,352	-14.291	γ_{22} 1.998×10^{-14}

and H_1 can be retained for all values of θ in (8.48). This decision implies that the extent to which individuals perceive themselves to be particularly exposed to the risk of criminal victimization may vary depending on whether they are male or female, and on whether they are elderly.

Table 8-6 has the weighted least squares estimates of (8.22) for various values of the term x_i^{ℓ} of equations (8.42) and (8.45). The table also shows the probabilities of these estimates in the sampling distribution of chi-square with one degree of freedom. Given these results, $\sim H_1$ can be retained and H_1 can be rejected for all values of x_i^{ℓ} except x_1^{l} and x_1^{j}, for x_1^{j} and x_1^{l}, for x_1^{l} and x_1^{j}, and for x_1^{j} and x_1^{l}. So, variations in the extent to which people perceive themselves to be unable to avoid being victimized may affect women's senses of security more than men's, and may affect old folk's senses of security more than younger folk's. Also, variations in the perceived risk of being robbed may affect women's feelings of safety more than men's, and variations in the perceived risk of being raped may affect elderly people's feelings of safety more than younger people's.

Findings Concerning Fear of Crime, Perceived Risks of Criminal Victimization, and Perceived Vulnerability to Crime

Whether differences in fears of crimes, perceived risks of criminal victimization, and perceived vulnerability to crime can fully explain women and elderly people being especially likely to feel unsafe was investigated using a moment structure model. The model that was used is referred to as model (8.47-51).

Table 8-6. Estimates of (8.23) for Various Values of x_i^ℓ of equations (8.42) and (8.44), Significance of x_i^ℓ, Values of N for the Estimates, and Probabilities of the Estimates in the Distribution of Chi-square with One Degree of Freedom, Adults in England and Wales in 1984, Weighted Least Squares Estimates from Second-Order Moments

Values of x_i^ℓ	Significance of x_i^ℓ	N	Estimate of (8.23)	Probability
x_4^j and x_1^j	Men's and Women's Perceptions of Being Particularly Exposed to the Risk of Criminal Victimization because of Inability to Avoid Being Victimized	10,674	45.53	1.503×10^{-11}
x_1^j and x_1^j	Elderly and Younger People's Perceptions of Being Particularly Exposed to the Risk of Criminal Victimization because of Inability to Avoid Being Victimized	10,746	20.06	7.505×10^{-5}

Table 8-6. *Continued.*

Values of x_i^ℓ	Significance of x_i^ℓ	N	Estimate of (8.23)	Probability
x_1^j and x_1^j	Men's and Women's Perceptions of Being Particularly Exposed to the Risk of Criminal Victimization because of the Incidence of Crime in their Neighbourhoods	9,414	0.06	.814
x_1^j and x_1^j	Elderly and Younger People's Perceptions of Being Particularly Exposed to the Risk of Criminal Victimization because of the Incidence of Crime in their Neighbourhoods	9,465	1.07	.300

Table 8-6. *Continued.*

Values of x_i^ℓ	Significance of x_i^ℓ	N	Estimate of (8.[illegible])	Probability
x_3^1 and x_3^2	Men's and Women's Perceived Risks of Vandalism	10,710	0.13	.720
x_3^1 and x_3^2	Elderly and Younger People's Perceived Risks of Vandalism	10,710	0.13	.720
x_4^1 and x_4^2	Men's and Women's Perceived Risks of Robbery	10,689	6.62	.010
x_4^1 and x_4^2	Elderly and Younger People's Perceived Risks of Robbery	10,759	1.96	.161
x_5^1 and x_5^2	Men's and Women's Perceived Risks of Being Attacked	10,654	1.90	.168
x_5^1 and x_5^2	Elderly and Younger People's Perceived Risks of Being Attacked	10,923	0.01	.942

Table 8-6. *Continued.*

Values of x_i^ℓ	Significance of x_i^ℓ	N	Estimate of (8.23)	Probability
x_4^1 and x_4^2	Men's and Women's Perceived Risks of Burglary	10,669	0.00	.987
x_4^1 and x_4^2	Elderly and Younger People's Perceived Risks of Burglary	10,738	0.05	.825
x_1^1 and x_1^2	Elderly and Younger People's Perceived Risks of Rape	10,786	6.91	.009

Model Specification

Model (8.49-53) is defined by these equations:

(8.49)
$$y = \begin{bmatrix} \gamma_1 & \gamma_2 & \gamma_3 & \cdot & \cdot & \cdot & \gamma_{27} \end{bmatrix} \begin{bmatrix} x_1 \\ x_2 \\ x_3 \\ \cdot \\ \cdot \\ \cdot \\ x_{27} \end{bmatrix} + \zeta$$

(8.50)
$$\begin{bmatrix} x_{15} \\ x_{16} \\ x_{17} \\ x_{18} \\ x_{19} \\ x_{20} \end{bmatrix} = \begin{bmatrix} x_6 \\ x_7 \\ x_8 \\ x_9 \\ x_{11} \\ x_{12} \end{bmatrix} \begin{bmatrix} x_{11} \end{bmatrix}$$

(8.51)
$$\begin{bmatrix} x_{21} \\ x_{22} \\ x_{23} \\ x_{24} \\ x_{25} \\ x_{26} \\ x_{27} \end{bmatrix} = \begin{bmatrix} x_6 \\ x_7 \\ x_8 \\ x_9 \\ x_{10} \\ x_{11} \\ x_{12} \end{bmatrix} \begin{bmatrix} x_{12} \end{bmatrix}$$

(8.52) $$E(y) = E(x_i) = E(\zeta) = 0, \text{ for } i = 1, 2, 3, \ldots, 27$$

(8.53) $$\gamma_{13} = 0 = \gamma_{14}$$

The greek letter γ with any subscript i in equations (8.49) and (8.53) represents a constant, for $i = 1, 2, 3, \ldots, 27$. The letter y denotes a variable ranging over how unsafe people feel while out alone in their neighbourhoods at night. The symbols x_1 through x_5 represent how worried individuals are about being burgled, being robbed, having property vandalized, being assaulted, and being raped. The symbols x_6 through x_{10} stand for how certain people feel that they will experience burglary, robbery, vandalization of property, assault, and rape in the next year. Symbols x_{11} and x_{12} represent perceptions of being particularly exposed to the risk of criminal victimization, due to an inability to avoid victimization, and due to the neighbourhood being a place where crimes are especially likely to happen. The variable denoted by x_{13} covers the probability after the fact of being female, while the variable denoted by x_{14} ranges over the probability after the fact of being sixty-five years of age or older. The terms x_{15} through x_{19} and x_{11} through x_{17} represent increments in the effects of perceived threats of criminal victimization on feelings of security for women and the elderly as compared with men and younger people. The greek letter ζ in equations (8.49) and (8.52) covers all of the variables that may influence y so that

$$E(x_i\zeta) = 0, \text{ for } i = 1, 2, 3, \ldots, 14.$$

Explication

Assume that how worried people are about a crime is a perfect indicator of how afraid they are of it. Also assume that how certain people are that they will be subjected to a crime in the next year is a perfect indicator of their perceived risk of being subjected to that offense. Take it that perceptions of being particulary exposed to the risk of criminal victimization, and being particulary liable to be harmed if criminally victimized are aspects of perceived vulnerability to crime. Further, assume that increments in the effects of perceived threats of criminal victimization on feelings of security result from perceptions of being particularly liable to be harmed if criminally victimized. Under the foregoing set of assumptions, model (8.49–53) is a model of how fears of crimes, perceived risks of criminal victimization, and perceived vulnerability to crime might make women and elderly people feel unsafe while out alone at night. The model proposes, in particular, in (8.53), that fears of crimes, perceived risks of criminal victimization, and perceived vulnerability to crime are sufficient to explain women and elderly people feeling more unsafe than men and younger people feel. Whether the model is correct in this proposition for a given population may be decided by a test of the model's completeness for that population. The hypothesis that the model is not complete for population of adults in England and Wales in 1984 is referred to as H_{10}. The alternative hypothesis is referred to as $-H_{11}$, and may be formulated thus:

$$\underset{N \to \infty}{\text{plim}}\, F(\theta) = 0$$

for adults in England and Wales in 1984, where $F(\theta)$ is defined as for (6.1) Under $-H_{11}$, the sampling distribution of the quantity (8.22) is chi-square with two degrees of freedom in large, simple random samples of the specified population. No more than a .1 probability for error in rejecting $-H_{11}$ was thought to be acceptable (cf. Hayduk 1987, 161).

Identification and Estimation

Estimating the quantity (8.22) for model (8.49-53) for a given population is possible provided the unknown terms of the model are estimable. That the unknown terms of model (8.49-53) are estimable is certified by Bollen's "Null B" rule (Bollen 1989, 94). Therefore, (8.22) may be estimated for the population of adults in England and Wales in 1984.

An estimate of (8.22) for the said population was obtained based on data from the 1984 *British Crime Surveys*. These data, which are in the file BCS84.RAW on the micro floppy disk accompanying this dissertation, pertained to the same sub-group of 5,520 individuals for whom model (8.25-27) was estimated. The data for each individual were assigned a weight that was chosen to be inversely proportional to the probability of the individual having been included in the survey sample (cf. Kalton 1983, 70). Specifically, the weight for the data for the ith person was chosen to be equal to the quantity

$$\frac{100}{\bar{w}p_i}, \tag{8.54}$$

where p_i is the probability of the person having been included in the survey sample, and $\bar{w}$ is the quantity

$$\frac{\sum_{i=1}^{N} \frac{1}{p_i}}{N}.$$

Normal scores were assigned to the survey participants' responses to the question about how safe they felt walking alone in the vicinity of their homes after dark. Those scores were used to measure y, while normal scores assigned to the answers to the questions about the worrisomeness of various crimes were used to measure x_1 through x_3. Normal scores were also assigned to the responses to the questions about how certain the survey participants were that they would be subjected to the various crimes in the next year. Those scores were used to measure x_4 through x_{10}. The variable x_{11} was measured by normal scores that were assigned to the survey participants' responses to the query about how their chances of being mugged compared with those of other people in the vicinity. Values of the quantity

$$\ln[0.005 + (0.99 \times s)]$$

of (8.38) were used to measure x_{11}.

The second-order moments of the variables y and x_1 through x_{11} were estimated after the records of the 1,164 individuals who were missing data on any of the variables had been set aside. The generalized least squares technique was applied to the estimated second-order moments of y and x_1 through x_{11} in order to estimate

$$2(N - 1)F_{GLS}, \tag{8.55}$$

where F_{GLS} is the value of the generalized least squares discrepancy function (cf. Jöreskog and Goldberger 1972, 244-51). The quantity F_{GLS} in (8.55) is equivalent to the quantity $F(\theta)$ of (8.22) under two conditions, so when those conditions are fulfilled, an estimate of (8.55) may be taken as an estimate of (8.22).

The first of the two conditions is that the value of F_{GLS} is based upon consistent estimates of the second-order moments of the manifest variables of the moment structure model in question. There are reasons for thinking that this condition is not satisfied for the value of F_{GLS} for model (8.49–53) determined from the 1984 *British Crime Surveys* data. One reason is that the second-order moments of the manifest variables y, and x_1 through x_{11} were estimated from normal scores assigned to small sets of discrete values, rather than from the actual values of the manifest variables (cf. Bollen 1989, 434). Another reason is that data were missing for some individuals on y or on x_1 through x_{11} (cf. Bentler and Chou 1987, 98–99; Bollen 1989. 369–70). Only if these data were missing completely at random (Marini, Olsen, and Rubin 1979, 316, 318) would consistent estimates be obtained for the second-order moments of y and x_1 through x_{11}.

The second condition for an estimate of (8.55) to be taken as an estimate of (8.22) is that the manifest variables of the moment structure model in question are multivariate mesokurtic (Browne 1982, 82–83; Bollen 1989, 114; Cuttance 1987, 253). One can test for violations of this condition. Under the hypothesis that a set of p variables are multivariate mesokurtic, the quantity

(8.56) $$\{b_{2,p} - [\,p(p+2)(N-1)/(N+1)]\,\}/\,[\,8p(p+2)/N\,]^{1/2}$$

is a standard normal variate for large samples of size N (Mardia 1970, 527), where

$$b_{2p} = \frac{1}{N}\sum_{i=1}^{N}[(\mathbf{X}_i - \bar{\mathbf{X}})' \mathbf{S}^{-1}(\mathbf{X}_i - \bar{\mathbf{X}})]^2. \qquad (8.57)$$

In equation (8.57), X_i is a column vector of the values for all variables for the ith observation, $\bar{X}$ is the corresponding column vector of sample first moments, and S is the matrix of sample second-order moments. The DOS-PRELIS computer program was used to estimate the value of (8.56) for the variables y and x_1 through x_{11} of model (8.49-53) for the 5,520 individuals selected from the 1984 *British Crime Surveys* sample (DOS-PRELIS Version 1.20). A maximum level of .1 was tolerated for the probability of being in error in denying that (8.56) is a standard normal variate for y and x_1 through x_{11} in the population of adults in England and Wales in 1984.

Results

The absolute value of (8.56) for the variables y and x_1 through x_{11} of model (8.49-53) was 0.175. That absolute value has a probability of .861 in the distribution of a standard normal variate (SYSTAT for Windows Version 5, distribution functions). So, it should not be denied that (8.56) is a standard normal variate for y and x_1 through x_{11} in the population of adults in England and Wales in 1984.

The value of the quantity (8.55) for model (8.49-53) in the same population was estimated to be 98.42. That value has a probability of 9.992 $\times 10^{-11}$ in the distribution of chi-square with two degrees of freedom. Therefore, assuming the estimate of (8.55) can be taken as an estimate of (8.22), $\sim H_1$ can be rejected and H_1 can be retained. This decision may imply that fears of crimes, perceived risks of criminal victimization, and perceived vulnerability to crime are not sufficient to explain women and elderly people feeling more unsafe than men and younger people feel.

Discussion

Now it is possible to make decisions on the outstanding issues concerning fear of crime, perceived risk of criminal victimization, perceived vulnerability to crime, and feeling unsafe while out alone in the neighbourhood at night. As to whether the association of fear of crime with feelings of insecurity are linear, it may be said that the results of analyzing available data are reconcilable with the possibility that the association is linear. True, the estimation of model (8.1-9) revealed variations in the magnitudes of the effects of fear on the probabilities of experiencing various levels of insecurity, and those variations may be due to nonlinearities in the association of fear with insecurity. Yet, the differences in the magnitudes of the effects of fear of crime on the probabilities of experiencing the various levels of insecurity are more readily explained by the way in which the continuum of the experience of insecurity is divided into levels in models (8.1-9). The levels of insecurity that are distinguished are those of feeling very safe, feeling fairly safe, feeling a bit unsafe, and feeling very unsafe. Saying that one ***feels fairly*** *safe* would be the least committal response one could give to an inquiry about which of the levels of insecurity one experiences. Experimental evidence suggests that interviewees prefer noncommittal responses (Converse and Presser 1986, 36). Thus, one would expect people to opt for saying they feel fairly safe, no matter how fearful of crime they may be. Then, fear of crime would be associated less strongly with the probability of people saying that they feel fairly safe than with the probabilities of people saying they feel very unsafe or a bit unsafe. That state of affairs would explain the largest variations in the magnitudes of the effects of fear of crime on the probabilities of experiencing the various levels of insecurity.

Anyway, even if the variations were due to nonlinearities in the association of fear of crime with feelings of insecurity, it does not seem as though the nonlinearities could be considerable. The directions of the effects of fear of crime on the probabilities of experiencing the various levels of insecurity are consistent with the possibility that the association of fear with feelings of insecurity is monotonic. The strength of this monotonic association is measured by the rank correlation coefficient for fear of crime and feelings of insecurity. That coefficient is not estimated to be much smaller than the Pearson coefficient of correlation, which measures the strength of the linear association of the variables. So, the magnitude of the linear association of fear of crime with feelings of insecurity may not be very much smaller than the magnitude of the overall monotonic association of the variables. In that case, the overall association of fear of crime with feelings of insecurity may be adequately represented as a linear association, as in models (8.25–27), (8.32–34), and (8.49–53).

On the issue of whether the distinction between fear of property crimes and fear of personal crimes corresponds with the facts, it may be said that distinguishing between just these two kinds of fear of crime will not suffice. That position on the issue is supported by the finding that ratings of fears of offenses against the person and ratings of fears of offenses against property are not adequately represented as linear functions of just two latent variables. It also may be said that distinguishing only between perceived risks of property crimes and perceived risks of personal crimes will not suffice to cover the facts about perceived risks of criminal victimization. That position is supported by the finding that ratings of the risk of the offenses against the person and ratings of the risk of the offenses against property are not adequately represented as linear functions of just two latent variables. The finding that the standardized residuals for fears of rape or sexual assault and for fears of murder are especially large for model (8.10-21′) can inform the development of a more elaborate set of distinctions among fears of crimes. Fears of criminally indecent sexual advances, fears of homicide, fears of criminally bodily harm, and fears of theft or extortion can be set apart from one another as distinct kinds of fears of crimes. Unfortunately, there are no data for deciding whether distinctions among these four kinds of fears of crimes are sufficient to cover the facts. Until someone corroborates a taxonomy of fears of crimes, and also a taxonomy of perceived risks of criminal victimizations, classifying different instances of these fears and perceived risks together would be presumptuous. This conclusion has implications for studying the possible effects of fearing crimes and perceiving risks of criminal victimization on how unsafe people feel while out alone in their neighbourhoods at night. One must allow for the possibility that different kinds of fears of crimes and perceived risks of criminal victimization have different effects on how unsafe people feel. Models (8.25-27), (8.30-31), (8.32-34), and (8.49-53) make this allowance for fears and perceived risks of assault, burglary, rape, robbery, and vandalization of property.

That women are especially afraid of the crimes of assault, burglary, rape, robbery, and vandalization does not suffice to explain their being more likely than men to feel unsafe while out alone in their neighbourhoods at night. This conclusion follows from the finding that feelings of being unsafe vary as a linear function of the probability of being female even when the variations associated with differences in fears of the various crime are taken into account. Another finding was that the magnitudes of men's and women's feelings of insecurity tend to differ even when the effects of differences in the magnitudes of their fears, and their perceived risks of the various crimes are considered. That finding shows that women both being more afraid, and perceiving greater risks of the various crimes than men will also not suffice to explain women being more likely to feel unsafe.

That the estimates of the terms representing the effects of being elderly on the perceived risks of being robbed and of being raped in model (8.30-31) were both negative implies that elderly people do not perceive greater risks of being raped and of being robbed than younger people perceive. This finding supplements similar ones from the 1990 *Fear of Crime in America Survey* and from Warr's (1982) survey of Seattle that were mentioned in chapter four. Taken together, the findings imply that there is no type of criminal victimization of which elderly people are known to be especially afraid, or to which they are known to perceive especially great risks of being subjected. Future research may establish that there are some types of criminal victimization of which elderly people are more afraid than younger people are, or of which elderly people perceive greater risks than younger people perceive. Until that possibility transpires, however, there will be no justification for saying that the reason elderly people tend to feel more unsafe than younger people feel is that the elderly are more afraid of crime and perceive greater risks of criminal victimization.

The existence of linear associations between feelings of insecurity while out alone at night and perceptions of being particularly exposed to the risk of criminal victimization is corroborated by the estimates for model (8.35-36). That the associations may be positive is shown by the positive values of the estimates obtained for (8.24) for that model. From these findings, it seems that if perceptions of being particularly exposed to the risk of criminal victimization manifest perceived vulnerability to crime, then perceived vulnerability to crime is positively associated with feeling unsafe while out alone at night.

By estimating model (8.40-41), it was found that both men and women and elderly and younger people may differ in the extent to which they perceive themselves to be particularly exposed to the risk of criminal victimization. The positive values of three of the estimates of (8.24) for the model indicate that women and elderly people generally have a greater sense of being particularly exposed to the risk of criminal victimization than men and younger adults have. By estimating models (8.42-44) and

(8.45-47), it was found that women and elderly people are also more averse to certain threat of criminal victimization then men and younger people are. So, if perceptions of being particularly exposed to the risk of criminal victimization and aversion to threats of being criminally victimized are both manifestations of perceived vulnerability to crime, then women and elderly people have a greater perceived vulnerability than men and younger people have. That women and elderly people have a greater perceived vulnerability to crime than men and younger people have may partially explain the phenomenon of women and elderly people being especially likely to feel unsafe while out alone at night.

That H_{11} was corroborated by the estimates for model (8.49-53) may be because greater perceived vulnerability to crime, and greater fear, and perceived risks of criminal victimization are not sufficient to explain women and elderly people being especially likely to feel unsafe while out alone at night. Yet, it is also possible that H_{11} was corroborated because of errors in the measurement of the variables x_1 through x_{11} of model (8.49-53). Observations on these variables are ordered into categories that are probably too few to capture the true diversity among the cases, and the test of H_{11} does not consider the effects these errors of measurement could have (Asher 1983, 26, 28). The outcome of the test depends on the sample estimates for the quantities γ_{13} and γ_{14} of model (8.49-53) being too large to be consistent with the possibility that both quantities are zero in the population. It can be shown that γ_{13} is directly proportional to E(x_1x_1), E(x_2x_2), E(x_3x_3), and E(x_ix_i), and inversely proportional to E($x_{13}x_1$), E($x_{13}x_2$), E($x_{13}x_3$), E($x_{13}x_i$), E(yx_1), E(yx_2), E(yx_3), and E(yx_i), where i = 4, 5, 6, . . ., 27, $i \neq$ 13, 14. Also, it can be shown that γ_{14} is directly proportional to $E(x_1x_1)$, $E(x_2x_2)$, $E(x_3x_3)$, and $E(x_ix_i)$, and inversely proportional to $E(x_{14}x_1)$, $E(x_{14}x_2)$, $E(x_{14}x_3)$, $E(x_{14}x_i)$, $E(yx_1)$, $E(yx_2)$, $E(yx_3)$, and $E(yx_i)$. Let x^* be a measure of x that incorporates a quantity of error δ, where x denotes any one of the variables x_1 through x_{14} of model (8.49-53). If the variable x is measured with a quantity of error, δ, then the values recorded for x will really be values of x^* so that

(8.58) $$x^* = x + \delta.$$

Now, comparing the quantities $E(x_{13}x)$, $E(x_{14}x)$, $E(yx)$, and $E(xx)$, with the quantities $E(x_{13}x^*)$, $E(x_{14}x^*)$, $E(yx^*)$, and $E(x^*x^*)$ shows the consequences of estimating γ_{13} and γ_{14} from a sample in which x_1 through x_{14} are measured with error. The quantities $E(x_{13}x^*)$ and $E(x_{14}x^*)$ are smaller than $E(x_{13}x)$ and $E(x_{14}x)$ by magnitudes equal to $-E(x_{13}\delta)$ and $-E(x_{14}\delta)$, for it follows from (8.58) that

$$E(x_{13}x^*) = E[x_{13}(x + \delta)] = E(x_{13}x) - [-E(x_{13}\delta)],$$

and that

$$E(x_{14}x^*) = E[x_{14}(x + \delta)] = E(x_{14}x) - [-E(x_{14}\delta)].$$

The quantity $E(yx^*)$ is smaller than $E(yx)$ by a magnitude of $-E(y\delta)$ because

$$E(yx^*) = E[y(x + \delta)] = E(yx) - [-E(y\delta)].$$

The quantity $E(x^*x^*)$ is larger than $E(xx)$ by a magnitude of $E(\delta\delta) + 2E(x\delta)$ since

$$\begin{aligned} E(x^*x^*) &= E[(x + \delta)(x + \delta)] \\ &= E(xx) + E(\delta\delta) + 2E(x\delta). \end{aligned}$$

The value of γ_{11} is inversely proportional to $E(x_{11}x)$ and $E(yx)$, and directly proportional to $E(xx)$, and the value of γ_{11} is inversely proportional to $E(x_{11}x)$ and $E(yx)$, and directly proportional to $E(xx)$. Therefore, estimating γ_{11} and γ_{11} from data with values of x^* substituted for values of x may produce estimates that are larger than those that would have been obtained had data with values for x been used instead. Thus, errors in the measurement of x_1 through x_{11} may be why sample estimates of γ_{11} and γ_{11} are too large to be consistent with the possibility that both quantities are zero in the population. That may be why the estimates of γ_{11} and γ_{11} obtained from the 1984 *British Crime Surveys* data are too large, and, therefore, why hypothesis H_{11} is corroborated by a test based on those data.

If H_{11} is corroborated because of errors in the measurement of the variables x_1 through x_{11} of model (8.49-53), then more accurate measures of those variables are required in order to establish whether it is solely due to mistakes in their measurement that H_{11} is corroborated. But, if H_{11} is corroborated because women's and elderly people's fears, perceived risks, and perceptions of vulnerability cannot fully explain their being especially likely to feel unsafe, then other causes for their tendency to feel unsafe should be identified. Here, it is assumed that H_{11} is corroborated because the phenomenon of women and elderly people being especially likely to feel unsafe cannot be fully explained by their fears, perceived risks, and perceptions of vulnerability. Thus, the next chapter proposes other possible causes of the phenomenon. These causes are identified by extending arguments about fear of crime to cover the phenomenon of feeling unsafe while out alone in one's neighbourhood at night.

CHAPTER 9

FURTHER EXPLANATIONS AND MORE FINDINGS

Scholars have identified three states of mind that may cause people to feel unsafe while out alone in their neighbourhoods at night: fear of crime, perceived risk of criminal victimization, and perceived vulnerability to crime. The findings of the previous chapter may be taken as evidence that the phenomenon of women and elderly people being especially likely to feel unsafe cannot be fully explained by their being especially susceptible to these states of mind. In this chapter, arguments about fear of crime are used as a basis for identifying three other factors that may important for understanding the phenomenon. These factors are experience of incivility, position in society, and intending to avoid criminal victimization.

Experience of Incivility

Experience of incivility has been identified as a possible cause of fear of crime (Taylor and Hale 1986, 154). It also may make people feel unsafe when out by themselves in their neighbourhoods after dark.

The Term *Incivility*

The term *incivility* refers to "improper behaviour in public places" (Wilson 1968, 26). Thus, the term denotes deviancies (Morris 1979, 169), but deviancies specifically from standards for conduct in front of other people.

These deviancies may be perceived not only directly, but also indirectly, by the mediation of their consequences (cf. Goffman 1963, 8-9). For example, people who offend others who witness them littering will likely succeed in also offending folks who see just the litter. Public misbehaviour that is directly perceived is often called *social incivility* in the scholarly literature on fear of crime (Hunter 1981, 5-7; Lagrange, Ferraro, and Supancic 1992, 311-34; Covington and Taylor 1991, 232), but calling them *interpersonal incivilities* might be more appropriate. Uncivil behaviour that is indirectly perceived is usually referred to as a *physical incivility* (Hunter 1981, 5-7; Lagrange, Ferraro, and Supancic 1992, 311-34; Covington and Taylor 1991, 232).

The standards for conduct in public places that incivilities breach may be customary or statutory (Hunter 1981, 3-5). Either way, these standards may appear to be particular to certain groups. Yet, Erving Goffman has endeavoured to show that specific rules for behaviour in public can be reformulated as principles that must be universal because, without them, face-to-face interaction between people could not go on (Goffman 1963). There would only be confusion, for instance, if folks never had any idea of what one another's main object of involvement in a situation was supposed to be (Goffman 1963, 43, 50). So, perhaps the principle that one should have the appropriate main object of attention is a universal standard for behaviour in public (Goffman 1963, 50). Then, the prohibitions some societies have against loitering may be just their way of enjoining people to maintain the proper main objective on public thoroughfares (Goffman 1963, 56-57). Goffman's usual method of establishing the universality of some principle of public behaviour is to cite instances of their application under circumstances that one might have considered exceptional. Thus, he tells of the normal distaste of mental patients for the incivility of an orderly whose quick response to an emergency showed that he was only pretending to be mainly involved with participating in the patients' recreational activities (Goffman 1963, 55-56).

The Possible Consequences of Experiencing Incivility

Fear of Crime as a Possible Consequence of Experiencing Incivility

Scholars have entertained at least two notions about how being subjected to incivilities might make people afraid of crime (Taylor and Hale 1986, 153-155). One notion is that people become afraid as a result of inferring a risk of experiencing criminally uncivil behaviour from previously having been exposed to offensive actions of a less serious nature (Ferraro, LaGrange, and Supancic 1992, 327). Another notion is that suffering exposure to uncivil behaviour engenders fear of crime by undermining one's faith in the capacity of the community to enforce standards of behaviour (Lewis 1980, 59; Lewis and Salem 1981, 418; 1986, 99; Taylor and Hale 1986, 155). These notions may both correspond with the facts. It is also possible that, when confidence in the community's capacity for exercising social control is lacking, risks of criminal victimization are inferred from experiences of incivility with particular conviction.

Feeling Unsafe While Out Alone at Night as a Possible Consequence of Experiencing Incivility

How Exposure to Incivility Could Make People Feel Unsafe

Exposure to uncivil behaviour may cause a person to feel unsafe while out alone at night. The motivation for this hypothesis should be apparent once it is clear that incivilities may be detrimental, and so, could constitute a threat to a person's security.

Uncivil behaviour violates rules that regulate interpersonal encounters. According to Theodore D. Kemper and Randall Collins (1990, 32-33), such encounters may be differentiated from one another completely in terms of the variations in the relative power and status of the persons involved. *Power* refers to the ability to compel others to do what they do not wish to do (Kemper and Collins 1990, 34). *Status* refers to the resource of having others voluntarily comply with one's wishes (Kemper and Collins 1990, 34). An encounter is structured to the extent that the participants can anticipate how much or how little power and status will be at their disposal as the encounter progresses (Kemper 1978, 375, 384). Whether the structure of the encounter is customary or statutory depends on whether the participants' expectations are based on a shared knowledge of the history of the surrounding community, or on some decree. Incivilities occur when one person breaks the structure. That could happen in two ways. The person might unexpectedly either refuse to recognize someone else's status or attempt to exert power over another individual. Such unanticipated, degrading, or oppressive behaviour is potentially detrimental to those at whom it is directed, for it may detract from the power and status to which they may either be accustomed, or feel legally entitled.

Since incivility may be detrimental to people, folks who are subjected to it in their own neighbourhoods can surely be expected to feel unsafe walking by themselves in those areas at night. Their feeling of insecurity may arise by way of their anticipating exposure to more uncivil behaviour. Otherwise, the feeling may result from the experience of incivility causing a loss of faith in the community's capacity for preventing such rudeness. They may see this capacity as embodied by the police, whom they may expect not only to deal with crimes, but also to maintain a certain standard of communal life (Hunter 1981, 8; Wilson and Kelling 1982, 36). Alternatively, they may see the capacity for maintaining civility as subsisting in more or less informal, civilian arrangements (Lewis and Salem 1986, 79).

How Exposure to Incivility Could Explain the Tendency of Women and Elderly People Not to Feel Safe

If exposure to incivility may make people feel unsafe, then perhaps it can partially explain women and elderly people feeling more unsafe than men and younger folks. Women and elderly people may feel more unsafe because they experience more behaviour that is uncivil (cf. Gardner 1989, 48–51), or experience more behaviour as being uncivil (cf. Burt and Estep 1981, 513, 520). Also, women and the elderly may be more sensitive to the uncouth acts they experience, and more sensitive to the possibility that the community cannot prevent such acts from occurring.

Position in Society

Perceptions of crime have been said to result from role expectations and social-structural constraints (Garofalo 1987, 36–38). Those aspects of social life may also partially determine how safe people feel while out alone at night.

James Garofalo uses *perceptions of crime* as a summary term for fears of crimes, perceived risks of being criminally victimized, and beliefs about the likelihood of crimes being committed (Garofalo 1987, 38). He proposes that perceptions of crime are affected by role expectations and social-structural constraints (Garofalo 1987, 36–38). The term *role expectations* refers to "cultural norms that are associated with achieved and ascribed statuses of individuals and that define preferred and anticipated behaviours" (Hindelang, Gottfredson, and Garofalo 1978, 242). *Social-structural constraints* refers to limitations on behavioral options that result from the particular arrangements existing within various social institutions (Hindelang, Gottfredson, and Garofalo 1978, 242).

Garofalo (1987) does not clarify how the states of mind covered by the term *perceptions of crime* may be affected by the roles people expect one another to perform, or by the restrictions that institutions may impose on people's actions. Other authors, however, have explained how states of mind may be influenced by role expectations and structural constraints.

For Hans Gerth and C. Wright Mills (1964, 95-96), role expectations are made manifest in the wishes of "significant others," while social-structural constraints are imposed by "authoritative others." Authoritative others are the people who decide whether one's actions are permitted (Gerth and Mills 1964, 95-96), while significant others are those who may confirm the image one wishes to have of oneself (Gerth and Mills 1964, 110-11). Gerth and Mills propose that both groups may determine one's mental states by sanctioning and rewarding one's actions, and, thereby, reinforcing any states of mind that one's actions may express (Gerth and Mills 1964, 183, 191). So, one way in which social-structural constraints and role expectations may influence thoughts and feelings is by the responses of authoritative and significant others to a person's actions.

Another possibility is suggested by Kemper (Kemper 1978, 72). He proposes that experiences of social relationships "cumulate to provide the basis for a subjective estimate of probable success or failure in any interaction episode" (Kemper 1978, 72), and that the anticipation of succeeding or failing results in optimism or pessimism (Kemper 1978, 47, 72-73). For Kemper (1978, 43), social relationships are relationships of status and power, and success or failure in an interaction episode means gaining or losing power or status. Power, the ability to compel other people to behave in a certain fashion (Kemper and Collins 1990, 34), is what people possess or lack in any circumstances where someone is subject to social-structural constraints. Status, the debt of voluntary compliance that others owe to one (Kemper and Collins 1990, 34), is what one has or does not have by virtue of the role one is expected to perform. So, if Kemper (1978) is right, and gains or losses in power and status in previous social relationships make a person optimistic or pessimistic, then that may be how social-structural constraints and role expectations influence one's state of mind.

The implications of both Gerth and Mills' (1964), and Kemper's (1978) arguments for how states of mind may be related to role expectations and structural constraints can be expressed using Bayes's theorem (*A dictionary of philosophy* 1984, 38-39). Bayes's theorem can be written

$$p(H|D) = \frac{p(D|H)p(H)}{p(D)}, \tag{9.1}$$

where $p(x)$ is the probability of x, $p(x|y)$ is the probability of x conditional upon y, H is a hypothetical state of affairs, and D is any datum (Fishbein and Ajzen 1975, 181-82). Manipulation of (9.1) gives

$$p(H) = \frac{p(D|H)}{p(H|D)}p(D), \tag{9.2}$$

Let the probabilities, $p(x)$ and $p(x|y)$ in (9.2) be subjective probabilities; let the datum, D, be one's place in society, and let the hypothesis, H, be that some desirable or undesirable situation will occur. Then the formula (9.2) expresses the implications of both Gerth and Mills' (1964), and Kemper's (1978) arguments for how states of mind may be influenced by one's location in the social order. In the special case where H is an hypothesis about crime, (9.2) expresses Garofalo's (1987) thesis that role expectations and social-structural constraints determine perceptions of crime.

If what people think and feel is partially determined by their position in society, then perhaps that would explain people feeling unsafe while out alone in their neighbourhoods at night. Consider that people may feel unsafe because they believe they may be harmed. Let y denote how unsafe they feel; let $p(x)$ denote the subjective probability of x; let H denote the event of them being harmed, and let D denote their positions in society. Then, according to (9.2),

$$y \propto p(H) = \frac{p(D|H)}{p(H|D)}p(D). \tag{9.3}$$

Assume that

$$\frac{p(D|H)}{p(H|D)} = \gamma, \tag{9.4}$$

where γ is a constant. To test

$$y \propto p(H) = \gamma p(D) \tag{9.5}$$

for a given population, one would have to find some way of measuring $p(D)$. If that problem could be overcome, and if (9.5) were to be corroborated, then differences between the positions that men and women, and elderly and younger people tend to occupy in society might explain the tendency of women and elderly people to feel unsafe.

Intending to Avoid Criminal Victimization

That women and elderly people are more likely to feel insecure while out alone in their neighbourhoods at night than men and younger people are may be due to their especially firm intentions to avoid becoming victims of crime. This argument extends a cognitive approach to understanding fear of crime to cover the phenomenon of feeling unsafe while out alone at night.

A Cognitive Approach to Understanding Fear of Crime

Wesley G. Skogan and Michael G. Maxfield advocate a cognitive approach to understanding fears of being criminally victimized (Skogan and Maxfield 1981, 257-62). Adopting such an approach would mean conceiving fears of being criminally victimized to be parts of a system of informational transformation that intervenes between environmental stimuli and behavioral responses (Bullock and Stallybrass 1977, 109; Fiske and Taylor 1984, 7). Yet, little progress has been made with formulating a cognitive account of fear of crime.

Bannon (Bannon 1988, 258), as well as Tom R. Tyler (Tyler 1980, 22), and Lauren B. Gates and William M. Rohe (Gates and Rohe 1987, 441) have put forward models that have the same general form. Let x_1 be a person's sex, let x_2 be a person's age, and let y_1 be the actions a person takes to prevent being criminally victimized. Take η_1 and η_2 to be latent variables representing any number of perceptions of risks of criminal victimizations, and any number of fears of being criminally victimized. Then Bannon's (Bannon 1988, 258), Tyler's (Tyler 1980, 22), and Gates and Rohe's (Gates and Rohe 1987, 441) models are all versions of model (9.6-11), defined by the following equations:

(9.6) $$\eta_1 = \gamma_{11}x_1 + \gamma_{12}x_2 + \zeta_1$$

(9.7) $$\eta_2 = \beta_{21}\eta_1 + \gamma_{21}x_1 + \gamma_{22}x_2 + \zeta_2$$

(9.8) $$y_3 = \beta_{31}\eta_1 + \beta_{32}\eta_2 + \gamma_{31}x_1 + \gamma_{32}x_2 + \zeta_3$$

(9.9) $$E(x_i) = E(\eta_j) = E(y_3) = E(\zeta_k) = 0, \quad \text{for } i, j = 1, 2, \text{ and } k = 1, 2, 3$$

(9.10) $$E(x_i\zeta_j) = E(\eta_i\zeta_j) = E(y_3\zeta_j) = E(\zeta_j\zeta_k) = 0, \quad \text{for } i = 1, 2, j = 1, 2, 3, \text{ and } j \neq k$$

(9.11) $$\gamma_{31} = 0 = \gamma_{32}$$

Model (9.6-11) depicts fears of being criminally victimized and perceptions of risks of criminal victimization as the two parts of a cognitive process mediating between the stimuli of one's age and sex, and one's actions to prevent being criminally victimized. If the relationship between the stimuli of being a certain age and being of a certain sex is entirely mediated by the cognitive process comprising perceived risks and fears of criminal victimization, then equation (9.11) should be sound.

Bannon's (Bannon 1988, 258), Tyler's (Tyler 1980, 22), and Gates and Rohe's (Gates and Rohe 1987, 441) results all indicate that (9.11) is not sound, however. Contrary to (9.11), it appears that

$$\gamma_{31} \neq 0 \neq \gamma_{32}.$$

This result is explainable by some cognition η_1 being omitted from equations (9.6–11) when

$$\eta_3 \propto x_1,$$

$$\eta_3 \propto x_2,$$

and,

$$y_3 \propto \eta_3$$

(cf. Berry and Feldman 1985, 20-21). Martin Fishbein and Icek Ajzen (1975) have a general theory of cognition whereby η_1 may be identified.

Fishbein and Ajzen propose that whether one will perform a certain action depends on whether one intends to do so (Fishbein and Ajzen 1975, 369). They say that whether one forms the intention depends on one's attitudes toward the object of the action, and on one's subjective norms concerning that action (Fishbein and Ajzen 1975, 334). Fishbein and Ajzen define *attitude* as the sum of one's predispositions toward a given object (Fishbein and Ajzen 1975, 222–35), each of those predispositions being comprised of both a belief that the object has a certain property, and an evaluation of that property (Fishbein and Ajzen 1975, 6, 222–35). *Subjective norm* is defined as the sum of one's predispositions toward taking a certain course of action (Fishbein and Ajzen 1975, 302). Those predispositions are described as combinations of beliefs about how significant others would respond to one taking that action, and motivations to comply with their wishes (Fishbein and Ajzen 1975, 302).

Take it that the perceptions of risks of being criminally victimized covered by the term η_1 of model (9.6–11) are one's beliefs about the objects of actions taken in response to the threat of criminal victimization. Also, take it that the fears of criminal victimization represented by η_1 are attitudes toward being criminally victimized. Then, according to Fishbein and Ajzen's (1975) theory of cognition, the variable η_1 that may be omitted from model (9.6–11) would be subjective norms regarding the measures one might take to avoid becoming a victim of crime.

Intentions to Avoid Being Criminally Victimized and Feelings of Insecurity While Out Alone at Night

In Fishbein and Ajzen's (1975) view, subjective norms regarding certain actions affect people's intentions to perform those actions. Consider the possibility that folks' subjective norms concerning precautions against criminal victimization affect their intentions to take those precautions. Then consider that intentions to take precautions against criminal victimization may be part of what people are expressing when they say that they do not feel safe going out alone in their neighbourhoods at night. If so, and if women and elderly people are especially likely to form those intentions, then that would explain why they tend to say that they feel unsafe while out by themselves in their neighbourhoods after dark.

That women and elderly people might want to take precautions against criminal victimization would be understandable if their subjective norms regarding such measures were in favour of adopting them. Why women and elderly people might have subjective norms sanctioning measures for preventing criminal victimization is covered by Vincent Sacco's (1990) arguments concerning fears of criminal victimization in patriarchal capitalist societies. In such societies, the workplace is clearly set apart from the home, and the notion that women belong at home is especially prevalent (Hagan, Simpson, and Gillis 1987, 791-93; 1988, 302). One way in which women may be reconciled with confining their activities to their homes is by their being told as adolescents that going out would be unwise because of the risks women face of being criminally victimized (Sacco 1990, 499-

500). Having the danger of criminal victimization impressed upon them in this way could make women especially susceptible to fear of crime, and could also be why they may develop subjective norms favouring precautions against being victimized. That the elderly may be particularly likely to be afraid of crime and to have subjective norms favouring precautions against crime would be understandable if capitalist societies are less patriarchal now than when today's elderly people were adolescents (cf. Sacco 1990, 502).

Reflection

Experience of incivility and position in society may be direct causes of feeling unsafe while out alone at night that are supplementary to fear of crime, perceived risk of criminal victimization, and perceived vulnerability to crime. Intending to avoid criminal victimization may be a direct cause of feeling unsafe that mediates the effects of fear of crime, perceived risk of criminal victimization, perceived vulnerability to crime, experience of incivility, and position in society. Fear of crime and experience of incivility would be covered by the term *attitude* in Fishbein and Ajzen's (1975) theory of cognition, while perceived risks of criminal victimization and perceived vulnerability to crime would be covered by the term *belief*. According to this theory, attitudes and beliefs are distinct from, and determining of intentions Therefore, if the statement that one *feels unsafe while out alone at night* expresses the intention to take precautions against criminal victimization, then the inclination to make the statement should not be directly affected by any attitudes or beliefs. According to Fishbein and Ajzen's (1975) theory, the inclination will be affected by attitudes and beliefs only indirectly, as a result of the effects of attitudes and beliefs upon the intention to take precautions against criminal victimization. In particular, the intention to take precautions against criminal victimization should mediate the effects of fear of crime, perceived risk of criminal victimization, perceived vulnerability to crime, experience of incivility, and position in society on the inclination to say that one *feels unsafe.*

Published Findings

Ferraro and LaGrange and Michael Supancic report a finding that is relevant to assessing the importance of experience of incivility for understanding the phenomenon of women being especially likely to feel unsafe while out alone at night (Ferraro, LaGrange, and Supancic 1992, 319–20). They estimated the model that is defined by equations (9.12) and (9.13).

(9.12) $$y_1 = \gamma_{11}x_1 + \zeta_1$$

(9.13) $$y_2 = \gamma_{21}x_1 + \zeta_2$$

In (9.12) and (9.13), γ_{11} and γ_{21} denote constants. The term x_1 represents the probability after the fact that a person is male, while the terms y_1 and y_2 represent experience of interpersonal incivilities and experience of physical incivilities.

Ferraro, LaGrange, and Supancic used data from the *Fear of Crime in America Survey* to estimate their model for the population of adults in the United States (Ferraro, LaGrange, and Supancic 1992, 316). To measure y_1 and y_2, they used the responses to several items that were included in the survey. Respondents had been asked whether the following phenomena were not a problem, somewhat of a problem, or a very serious problem in their neighbourhood (Ferraro, LaGrange, and Supancic 1992, app.):

1. Inconsiderate or disruptive neighbours
2. Unsupervised youth
3. Too much noise
4. People drunk or high on drugs in public

Ferraro, LaGrange, and Supancic arbitrarily assigned successive whole numbers to the three options for responses to these items, and took the sum of the numbers for each respondent to be that person's value on y_1 (Ferraro, LaGrange, and Supancic 1992, 317). To determine values on y_2, they followed the same procedure with the responses to a second set of items (Ferraro, LaGrange, and Supancic 1992, 318). This set of items asked people whether they had problems in their neighbourhoods with these four incivilities (Ferraro, LaGrange, and Supancic 1992, app.):

1. Trash and litter lying around
2. Neighbourhood dogs running loose

3. Vacant houses and unkempt lots
4. Abandoned cars or car parts lying around

The hypothesis that

$$\gamma_{11} \neq 0 \neq \gamma_{21}$$

was considered. Ferraro, LaGrange, and Supancic took .01 to be the maximum probability that they would accept for error in dismissing the alternative hypothesis that

$$\gamma_{11} = 0 = \gamma_{21}.$$

They found that they could retain this alternative hypothesis based on the values and estimated standard errors of ordinary least squares estimates of γ_{11} and γ_{11} (Ferraro, LaGrange, and Supancic 1992, 319, table 3).

This outcome might be taken as evidence that adult men in the United States do not experience less uncivil behaviour than adult women do. There is at least one very good reason not to interpret the finding in this way, however. The measures of exposure to incivilities used by Ferraro, LaGrange, and Supancic (1992) may not cover those types of events that women may be more likely to experience than men, and that women in particular may find distasteful.

Outstanding Issues

To assess the importan^e of the properties of experience of incivility and position in society for understanding why women and elderly people are especially likely to feel unsafe while out alone at night, accurate measures of these properties must be developed. Then, these measures would have to be used to determine whether experience of incivility and position in society are associated with feeling unsafe. The measures would also have to be used to determine whether the experience of incivility and the position in society of women and elderly people differ from those of men and younger people. Also, the measures would have to be used to establish whether the two properties, together with perceived vulnerability to crime, and fear, and perceived risk of criminal victimization can fully explain women and elderly people being especially likely to feel unsafe.

A measure of the intention to avoid criminal victimization would have to be developed in order to test the notion that saying that one *feels unsafe while out alone at night* expresses that intention. Such a measure would also be needed for deciding whether that notion is more economical than the notion that fear, perceived risk, perceived vulnerability, experience of incivility, and position in society cause people to say that they *feel unsafe*.

Findings from Available Data

Method and Data

Moment structure models were used to express ideas about the associations between experience of incivility, position in society, intending to avoid criminal victimization, being a woman, being elderly, and feeling unsafe while out alone at night. These models were tested with data from the 1984 *British Crime Surveys*. Some of the questions that were asked of the 11,030 survey participants are described in chapter seven. Another question that was asked was whether people in the respondents' neighbourhoods mostly helped one another, whether some people were helpful while others went their own way, or whether people generally went their own way (Principal Investigator, Home Office Research and Planning Unit 1987b, main questionnaire q. 4). Also asked was whether the following phenomena were not at all common, not very common, fairly common, or very common in the areas around the respondents' homes (Principal Investigator, Home Office Research and Planning Unit 1987b, main questionnaire q. 10):

1. Graffiti on walls or buildings
2. Teenagers hanging around on the streets
3. Drunks or tramps on the streets
4. Rubbish and litter lying about

Additional questions covered the marital status of the respondents (Principal Investigator, Home Office Research and Planning Unit 1987b, demographic questionnaire q. 1), their occupations (Principal Investigator, Home Office Research and Planning Unit 1987b, demographic questionnaire q. 2), and the last main jobs of the head of the respondents' households (Principal Investigator, Home Office Research and Planning Unit 1987b. demographic questionnaire q. 6). The purpose of the questions about the respondents' occupations and the last main jobs of the heads of their households was to determine the respondents' socio-economic groups (cf. Principal Investigator, Home Office Research and Planning Unit 1987b, demographic questionnaire p. 3; Principal Investigator, Home Office Research and Planning Unit 1987b, app. F, card 8; Principal Investigator, Home Office Research and Planning Unit 1987c, coding notes--general, p. 2). Socio-economic groups are classifications of persons worked out by officials of the British government. The groups are defined by employment statuses, by occupations, and by the industries in which persons are employed (U.K. Office of Population Censuses and Surveys 1980, xi). The definition of each socio-economic group is in table 9-1.

Respondents to the *Surveys' Follow-up Questionnaire* were asked whether the local police were doing a very good, fairly good, fairly poor, or very poor job (Principal Investigator, Home Office Research and Planning Unit 1987b, Follow-up Questionnaire q. 13). Those respondents were also asked whether they never, rarely, sometimes, usually, or always did the following when they went out after dark, simply as a precaution against crime (Principal Investigator, Home Office Research and Planning Unit 1987b, Follow-up Questionnaire q. 13):

Table 9-1 Definitions of Socio-economic Groups

Socio-economic Group	Definition
One	Persons who employ others in non-agricultural enterprises employing twenty-five or more persons, and persons who generally plan and supervise in such enterprises
Two	Persons who employ others in non-agricultural enterprises employing less then twenty-five persons, and persons who generally plan and supervise in such enterprises
Three	Self-employed persons engaged in work normally requiring qualifications of university degree standard

Table 9-1. *Continued.*

Socio-economic Group	Definition
Four	Employees engaged in work normally requiring qualifications of university degree standard
Five	Employees engaged in non-manual occupations ancillary to the professions, not normally requiring qualifications of university degree standard; persons engaged in artistic work and not employing others therein; self-employed nurses, medical auxiliaries, teachers, work-study engineers and technicians; employees (other than managers) engaged in occupations included in group six, who formally and immediately supervise others engaged in such occupations

Table 9-1. *Continued.*

Socio-economic Group	Definition
Six	Employees, not exercising general planning and supervisory powers, engaged in clerical, sales and non-manual communications occupations, excluding those who have additional and formal supervisory functions
Seven	Employees engaged in service occupations caring for food, drink, clothing and other personal needs
Eight	Employees (other than managers) who formally supervise others engaged in manual occupations, whether or not themselves engaged in such occupations
Nine	Employees engaged in manual occupations which require considerable and specific skills
Ten	Employees engaged in manual occupations which require slight but specific skills

Table 9-1. *Continued.*

Socio-economic Group	Definition
Eleven	Other employees engaged in manual occupations
Twelve	Self-employed persons engaged in any trade, personal service or manual occupation not normally requiring training of university degree standard and having no employees other than family workers
Thirteen	Persons who own, rent, or manage farms, market gardens, or forests, employing people other than family workers in the work of the enterprise
Fourteen	Persons who own or rent farms, market gardens or forests, employing people other than family workers
Fifteen	Persons engaged in tending crops, animals, game or forests, or operating agricultural or forestry machinery
Sixteen	Members of armed forces

Table 9-1. *Continued.*

Socio-economic Group	Definition
Economically Inactive Category One	Economically inactive persons resident in non-private households
Economically Inactive Category Two	Students and children under sixteen
Economically Inactive Category Three	Other economically inactive persons

Source: U.K. Office of Population Censuses and Surveys (1980, xi-xiii)

1. Avoid walking near certain types of people
2. Stay away from certain streets or areas
3. Go out with someone else rather than by yourself

The respondents to the Follow-Up Questionnaire were 6,032, or 55 percent of the 11,030 survey participants (NOP Market Research Limited 1987a, 12). All the participants who reported having been criminally victimized since January 1983 were included, except for some of those who reported having been exposed to incidents of vandalism only (NOP Market Research Limited 1987a, 4, 18, 20). They were asked to respond to the Follow-Up questionnaire only if they lived in an even-numbered ward within their parliamentary constituency, or in a ward with a number ending in the digit *1* or the digit *3* (NOP Market Research Limited 1987a, 10, 20). Survey participants who did not report having had any criminal victimization experiences since January 1983 were asked to respond if they lived in a ward with a number ending in the digits *0*, *1*, *2*, or *3* (NOP Market Research Limited 1987a, 10, 18). Wards in inner-city areas were numbered from one to twenty-seven, and wards elsewhere were numbered from one to twenty-four (NOP Market Research Limited 1987a, 10).

A record of the answers that the participants in the 1984 *British Crime Surveys* gave to the various questions they were asked is saved in the file BCS84.RAW on the micro floppy disk that is included with this dissertation. Some of the information in that file was described above, in chapter seven, and the remainder of the information is described below, in tables 9-2 and 9-3.

Findings Concerning Experience of Incivility

Measuring Experience of Incivility

To measure experience of incivilities properly, one would have to begin by identifying a representative sample of the phenomena that people may perceive as uncivil (cf. Gorsuch 1983, 351). A way of proceeding with this endeavour can be envisaged, provided there is no mistake in the argument put forward above, that incivilities are unexpected degrading, or oppressive actions.

Table 9-2. Values of Variables in File BCS84.RAW and Corresponding Numerical Codes

Variable	Values	Numerical Code
Whether the person's neighbourhood was one where people mostly help each other, or one where people mostly go their own way	Help each other	1
	Go own way	2
	Mixture	3
	Do not know	4
How common graffiti on walls or buildings were in the vicinity	Very common	1
	Fairly common	2
	Not very common	3
	Not at all common	4
	Did not know	5

Table 9-2. *Continued.*

Variable	Values	Numerical Code
How common teenagers hanging around on the streets were in the vicinity	Very common	1
	Fairly common	2
	Not very common	3
	Not at all common	4
	Did not know	5
How common drunks or tramps on the streets were in the vicinity	Very common	1
	Fairly common	2
	Not very common	3
	Not at all common	4
	Did not know	5
How common rubbish and litter lying about were in the vicinity	Very common	1
	Fairly common	2
	Not very common	3
	Not at all common	4
	Did not know	5

Table 9-3. *Continued.*

Variable	Values	Numerical Code
Whether the person was invited to respond to the Follow-Up Questionnaire	Was invited	1
	Was not invited	0
Whether the person maintains that the police in the area are doing a good job or a poor job	Very good	1
	Fairly good	2
	Fairly poor	3
	Very poor	4
	Did not know	5
How often the person, simply as a precaution when out after dark, avoids walking near certain types of people	Always	1
	Usually	2
	Sometimes	3
	Rarely	4
	Never	5
	Missing	6

Table 9-2. *Continued.*

Variable	Values	Numerical Codes
How often the person, simply as a precaution when out after dark, stays away from certain areas	Always	1
	Usually	2
	Sometimes	3
	Rarely	4
	Never	5
	Missing	6
How often the person simply as a precaution when out after dark, goes out with someone else rather than alone	Always	1
	Usually	2
	Sometimes	3
	Rarely	4
	Never	5
	Missing	6
Whether the person spent any evenings outside in the last seven days on leisure, social or other spare time activities	No	0
	Yes	1

Table 9-2. *Continued.*

Variable	Values	Numerical Code
How often a person who did not spend any evenings outside for leisure in the last seven days goes out after dark for leisure	Never	0
	At times	1
Marital status	Never married	1
	Married	2
	Separated	3
	Divorced	4
	Widowed	5
Socio-economic group	1 - 16	-
	Economically inactive	17

Table 9-2. *Continued.*

Variable	Values	Numerical Code
Occupation last week	Working over 30 hours per week	1
	Working 10 - 30 hours per week	2
	Working under 10 hours per week	3
	Unemployed and seeking work	4
	Sick or disabled and unable to work	5
	Retired	6
	Housewife	7
	In full-time education	8

Table 9-3. Column or Columns Where Variables in File BCS84.RAW are Located

Variable	Column or Columns
Whether the person's neighbourhood was one where people mostly help each other, or one where people mostly go their own way	39
How common graffiti on walls or buildings were in the vicinity	41
How common teenagers hanging around on the streets were in the vicinity	43
How common drunks or tramps on the streets were in the vicinity	45
How common rubbish and litter lying about were in the vicinity	47
Whether the person was invited to respond to the Follow-Up Questionnaire	49
Whether the person maintains that the police in the area are doing a good job or a poor job	51

Table 9-3. *Continued.*

Variable	Column or Columns
How often the person, simply as a precaution when out after dark, avoids walking near certain types of people	53
How often the person, simply as a precaution when out after dark, stays away from certain areas	55
How often the person simply as a precaution when out after dark, goes out with someone else rather than alone	57
Whether the person spent any evenings outside in the last seven days on leisure, social or other spare time activities	59
How often a person who did not spend any evenings outside for leisure in the last seven days goes out after dark for leisure	61
Marital status	63

Table 9-3. *Continued.*

Variable	Column or Columns
Socio-economic group	65 - 66
Occupation last week	68

The phenomena that people perceive as uncivil constitute the domain of the concept of *incivility*. To determine the domain of a concept, it is necessary to ascertain how that concept is situated in relation to other concepts in the language. This task can be accomplished by the semantic differential technique (Osgood, Succi, and Tannenbaum 1957, 19-20).

The semantic differential technique involves defining a multi-dimensional semantic space, each dimension of which is the range of meaning bounded by a certain pair of antonyms, chosen for pragmatic reasons (Osgood, May, and Myron 1975, 38). Then the meaning of any concept may be determined by finding where that concept is located within the semantic space in question (Osgood, May, and Myron 1975, 38).

To determine the domain of *incivility* by means of the semantic differential technique, several steps would need to be taken. First, every synonym for the terms *unanticipated*, *degrading*, and *oppressive* would have to be identified. Then, the antonyms for these terms and for each of their respective synonyms would need to be found. Next, semantic differential scales would have to be constructed from the antonymous pairs of terms. That is usually done by interspersing seven intervals between the elements of a pair of antonyms (Osgood, May, and Myron 1975, 41). For the next step, a sample of the speakers of our language would have to chosen, and invited to rate each verb in the language on the various semantic differential scales. Finally, the domain of *incivility* could be fixed as including all of the actions denoted by verbs with positive deviation scores relative to the mean of the quantity

$$\mathbf{A}x. \tag{9.14}$$

The term x in (9.14) represents a $(q \times 1)$ vector of mean ratings of verbs on the q semantic differential scales, where q is any natural number. The term A denotes a $(1 \times q)$ vector of weights assigned to the mean ratings on each scale. The weight for the mean ratings on the various scales would be determined in the following way. Let ξ_1, ξ_1, and ξ_1 stand for how unlikely, how degrading, and how oppressive actions are. Then the weight of the mean ratings on the ith semantic differential scale is given by the formula

$$A_i = \lambda_{i1} + \lambda_{i2} + \lambda_{i3}, \text{ for } i = 1, 2, 3, \ldots, q.$$

In this formula, λ_{ij} is a constant representing the proportion of change in the mean ratings for verbs on the ith scale associated with unit changes in ξ_j, for $j = 1, 2, 3$. Values for λ_{ij} could be chosen, amongst other ways, by solving for that term in the equation,

$$\begin{bmatrix} x_1 \\ x_2 \\ x_3 \\ . \\ . \\ . \\ x_q \end{bmatrix} = \begin{bmatrix} \lambda_{11} & \lambda_{12} & \lambda_{13} \\ \lambda_{21} & \lambda_{22} & \lambda_{23} \\ \lambda_{31} & \lambda_{32} & \lambda_{33} \\ . & . & . \\ \lambda_{q1} & \lambda_{q2} & \lambda_{q3} \end{bmatrix} \begin{bmatrix} \xi_1 \\ \xi_2 \\ \xi_3 \end{bmatrix} + \begin{bmatrix} \delta_1 \\ \delta_2 \\ \delta_3 \\ . \\ . \\ . \\ \delta_q \end{bmatrix},$$

given that

$$E(\xi_k) = E(\delta_m) = E(\xi_k \xi_l) = E(\delta_m \delta_n) = E(\xi_k \delta_m) = 0,$$

$$\text{for } k, l = 1, 2, 3, \text{ and } m, n = 1, 2, 3, \ldots, q.$$

Once the actions in the domain of the concept *incivility* had been identified, a representative sample of these actions could be extracted. That could be accomplished by dividing the range of their values for (9.14) into a number of equal intervals, and choosing any of the actions with values corresponding to the midpoints of those intervals. Given a representative sample of actions that are uncivil, valid measures of exposure to incivility could be constructed from people's reports of how frequently they are exposed to the actions in question.

Until such measures are developed there will be no certain way of knowing whether women and elderly people are more exposed to incivility than men and younger adults are. No existing set of data can provide an adequate basis for developing truly trustworthy measures of exposure to incivility. That should be kept in mind for the material that follows.

Model Specification

Moment structure models (9.15-16) and (9.15-17) were devised for the purpose of constructing a measure of experience of incivility on the basis of data from the 1984 *British Crime Surveys*. Model (9.15-16) is defined by the following two equations:

(9.15)
$$\begin{bmatrix} x_1 \\ x_2 \\ x_3 \\ x_4 \end{bmatrix} = \begin{bmatrix} \lambda_{11} & 0 \\ 0 & \lambda_{21} \\ 0 & \lambda_{31} \\ \lambda_{41} & 0 \end{bmatrix} \begin{bmatrix} \xi_1 \\ \xi_2 \end{bmatrix} + \begin{bmatrix} \delta_1 \\ \delta_2 \\ \delta_3 \\ \delta_4 \end{bmatrix}$$

(9.16)
$$E(\xi_i \xi_j) = E(\delta_i \delta_j) = E(\delta_j \delta_j),$$
$$\text{for } i = 1, 2, \text{ and } j = 1, 2, 3, 4$$

In these equations, λ_{ij} is a constant for $i = 1, 2, 3, 4$, and $j = 1, 2$. The terms x_1 and x_2 are manifest variables covering statements of how common graffiti is in the neighbourhood, and statements of how common litter is. Terms x_3 and x_4 are also manifest variables. These variables cover statements of how common it is for teenagers to be seen hanging around in one's neighbourhood, and statements of how common it is for drunks and tramps to be about on the streets. Terms ξ_1 and ξ_2 are latent variables representing perceptions of physical incivilities and perceptions of interpersonal incivilities. The term δ_i is a latent variable ranging over everything that affects x_i in such a way that

$$E(\xi_i\delta_j) = 0, \text{ for } i = 1, 2, \text{ and } j = 1, 2, 3, 4.$$

Equation (9.17) states that

(9.17) $$E(\xi_2\xi_1) = 1$$

Adding this specification to model (9.15–16) produces model (9.15–17).

Explication

Models (9.15-16) and (9.15-17) both deal with exposure to the phenomena of graffiti, loitering teenagers, drunks and tramps, and litter. Michael G. Maxfield, and Steve Box, Chris Hale and Glen Andrews took these phenomena to be instances of incivility that the survey respondents may have experienced (Maxfield 1987, 5-7; Box, Hale, and Andrews 1988, 341-42). Yet, there is no evidence that the phenomena are perceived by the respondents as infringements of the rules for behaviour in public, or as traces thereof. It would not be unreasonable to assume that there are standards prohibiting phenomena such as these from occurring, however. In particular, following Goffman (1963, 43, 50), one could argue that people's main involvements with walls and buildings are not supposed to be for the purpose of displaying messages, and that, therefore, graffiti is an impropriety. Similarly, people's main uses for public thoroughfares are not expected to include those of congregating or lingering, in which case, most folks will see teenagers and tramps "hanging around" on the streets as behaving improperly.

If graffiti and litter are incivilities, then they are physical incivilities, and if teenagers who "hang around" on the streets, and drunks and tramps who linger there are behaving uncivilly, then their actions are interpersonal incivilities. Model (9.15-16) expresses the notion that perceptions of the frequency of these interpersonal incivilities may be distinct from, though not necessarily unrelated to perceptions of the frequency of the physical incivilities. Model (9.15-17) differs from model

(9.15–16) in equation (9.17) which specifies that the perception of the frequency of interpersonal incivilities is not distinct from the perception of interpersonal incivilities.

Since model (9.15–16) specifies that the perception of the frequency of interpersonal incivilities may be distinct from the perception of physical incivilities, the model accommodates both the possibility that the perceptions are distinct, and the possibility that they are not. Model (9.15–17) is more restrictive, because it requires that the perceptions are not distinct from one another. If model (9.15–17) is as complete as model (9.15–16), then model (9.15–17) is preferable, for it covers reality as well as the other model does, and is more definite. Whether model (9.15–17) is as complete as model (9.15–16) for a given population can be decided by estimating the value of the quantity

(9.18) $$[2(N - 1)][F(\boldsymbol{\theta}_{9.15-17}) - F(\boldsymbol{\theta}_{9.15-16})],$$

where $F(\theta_{9.15-16})$ and $F(\theta_{9.15-17})$ denote the values of asymptotic distribution-free discrepancy functions for models (9.15–16) and (9.15–17), respectively. The quantity (9.18) should have a value of zero if (9.15–17) is as complete as (9.15–16). Take H_{11} to be the hypothesis that (9.18) is not zero for the population of adults in England and Wales, and take $\sim H_{11}$ to be the alternative hypothesis that (9.18) is zero in said population. Under $\sim H_{11}$, estimates of (9.18) are distributed as chi-square with one degree of freedom for large, simple random samples (Browne 1982, 100). Let .1 be the maximum acceptable probability for error in rejecting $\sim H_{11}$ (cf. Hayduk 1987, 161).

If $\sim H_{11}$ were to be rejected, then it would seem that perceptions of the interpersonal, and perceptions of the physical incivilities covered by the 1984 *British Crime* Surveys should best be seen as distinct from one another. Then, peoples' statements about how often the interpersonal incivilities occurred, and their statements about how often the physical incivilities occurred would have to be used to form separate scales for measuring experiences of physical incivility and experiences of interpersonal incivility. In constructing such scales, the optimal weights to assign to the statements of how often the various incivilities occurred could be determined by

$$(9.19) \qquad \hat{\boldsymbol{\Phi}}' \, \hat{\boldsymbol{\Lambda}}' \, \hat{\boldsymbol{\Sigma}}^{-1}.$$

The term $\hat{\boldsymbol{\Phi}}$ in (9.19) is a (2×2) matrix of estimates of the second-order moments of the variables ξ_1 and ξ_2 of model (9.15–16). The term $\hat{\boldsymbol{\Lambda}}$ is a (4×2) matrix of estimates for the term λ_{ij} of model (9.15–16) and $\hat{\Sigma}$ is the (4×4) matrix of second-order moments of x_1 through x_4 implied by that model. The expression (9.19) defines a (2×4) matrix of which the non-zero term in the ith column is the weight for x_i, where i = 1, 2, 3, 4.

If $\sim H_{11}$ were to be retained, then it would seem that perceptions of the various interpersonal incivilities and perceptions of the various physical incivilities should best not be seen as distinct from one another. In that case, peoples' statements about how often the interpersonal incivilities occurred, and their statements about how often the physical incivilities occurred could be combined in a scale for measuring perceptions of incivility. In constructing such a scale, the optimal weights to assign to the statements of how common the various incivilities were, could be determined by (9.19), subject to the qualification that

$$\boldsymbol{\Phi}' = \begin{bmatrix} 1 & 1 \\ 1 & 1 \end{bmatrix}. \tag{9.20}$$

The reliability of scales constructed as weighted sums of values on a set of manifest variables is given by

$$\frac{n\sum_{i=1}^{n}\sum_{j=1}^{m}\lambda_{ij}}{n\sum_{i=1}^{n}\sum_{j=1}^{m}\lambda_{ij} + \sum_{i=1}^{n}[E(\delta_i\delta_i)]} \tag{9.21}$$

(cf. McDonald 1985, 217). Here, n is the number of manifest variables combined to form the scale, m is the number of latent variables postulated to underlie those manifest variables, and λ_{ij} and δ_i are defined as they are for models (9.15-16) and (9.15-17).

Identification and Estimation

Both models (9.15-16) and (9.15-17) are identified under Bollen's "two-indicator rule" (Bollen 1989, 244). The quantity (9.18) was estimated from data in BCS84.RAW pertaining to a randomly-selected subgroup of the respondents to the 1984 *British Crime Surveys* Follow-Up Questionnaire. Of the 6,632 such respondents, 3,341, or 50 percent were selected. They comprised all of the respondents to the Follow-Up Questionnaire who happened to be included among the 5,039 individuals who were randomly selected for the purpose of estimating model (8.26-28). Cases with missing data on any of the manifest variables in models (9.15-16) and (9.15-17) were deleted. The remaining cases constitute a simple random sample, provided certain assumptions are warranted. These assumptions are that the missing data were missing completely at random (Marini, Olsen, and Rubin 1979, 316, 318), and that the factors determining the composition of the sample affect x_1 through x_4 only indirectly, by affecting ξ_1 and ξ_2.

Values for the respondents on the variables x_1 through x_4 were determined by assigning normal scores to their answers to the questions they were asked about how common graffiti, loitering teenagers, vagrants, and litter were in their neighbourhoods. Then the second-, and fourth-order moments of x_1 through x_4 were calculated. A value for quantity (9.18) was obtained from those statistics by the asymptotic distribution-free method of weighted least squares (cf. Bollen 1989, 425-429; Browne 1982, 86-89; Jöreskog and Sörbom 1989, 19).

Results

Of the 3,341 cases that were selected at random for estimating (9.18), thirty-three, or 1 percent were missing data on at least one of the manifest variables of models (9.15-16) and (9.15-17). The value obtained for (9.18) on the basis of the remaining 3,308 cases was 1.93. That value has a probability of .165 in the distribution of chi-square with one degree of freedom (SYSTAT for Windows Version 5, distribution functions), so assuming that the subgroup of respondents is equivalent to a simple random sample, $\sim H_{11}$ can be retained. To retain $\sim H_{11}$ is to imply that model (9.15-17) provides as complete a representation of the state of affairs among adults in England and Wales as model (9.15-16) provides. The former model is preferable to the latter model, then, for although it is more definite, it is not less complete. According to the preferred model, the perception of the frequency of interpersonal incivilities is not distinct from the perception of the frequency of physical incivilities.

A scale for measuring experience of incivility was constructed according to the formula

$$0.363x_1 + 0.356x_2 + 0.254x_3 + 0.275x_4, \tag{9.22}$$

where the coefficients of x_1 through x_1 are weights obtained by (9.18) and (9.19). The value obtained for (9.21) for the scale defined by (9.22) was .782.

Associations of Experience of Incivility and Lack of Faith in the Capacity of the Community to Prevent Uncivil Behaviour with Feeling Unsafe While Out Alone at Night

Moment structure model (9.23-24) was written to determine whether experience of incivility and lack of faith in the capacity of the community to prevent uncivil behaviour are associated with feeling unsafe while out alone in one's neighbourhood at night. Model (9.25-27) was written to determine whether the association between experience of incivility and feeling unsafe is stronger for people who have no confidence in the community's capacity to enforce standards of civility. The two models were tested for the population of adults in England and Wales.

Model Specification

Model (9.23-24) is defined by two equations, as follows:

(9.23) $$y = \gamma_i x_i + \zeta, \text{ for } i = 1, 2, 3$$

(9.24) $$E(y) = E(x_i) = E(\zeta) = 0, \text{ for } i = 1, 2, 3$$

Here, the term γ is a constant, while the terms y, x_i, and ζ are all variables, for $i = 1, 2, 3$. The variable y ranges over feelings of insecurity while out alone in the neighbourhood at night. The variable x_1 ranges over experiences of incivility. Disenchantment with the will of the community to uphold standards of civil behaviour by informal measures is represented by the variable x_2, while lack of faith in the official guardianship of civility is represented by x_3. The variable ζ covers all of the factors that affect y so that

$$E(x_i\zeta) = 0, \text{ for } i = 1, 2, 3.$$

Model (9.25-27) is defined by three equations:

(9.25) $$y = \gamma_1 x_1 + \gamma_2 x_2 + \gamma_3 x_3 + \gamma_4 x_4 + \zeta$$

(9.26) $$x_4 = x_1 \times x_2 \times x_3$$

(9.27) $$E(y) = E(x_i) = E(\zeta) = 0, \text{ for } i = 1, 2, 3$$

The term γ_i in (9.25) is a constant, for i = 1, 2, 3, 4. The terms y and x_1 through x_4 are all variables, defined in the same way as the corresponding terms of (9.23). The term ζ is a variable that covers all of the factors affecting y so that

$$E(x_i\zeta) = 0, \text{ for } i = 1, 2, 3, 4.$$

Explication

Model (9.23-24) proposes that experience of incivility and lack of faith in the community's capacity to prevent uncivil behaviour are linearly associated with feelings of being unsafe while out alone in one's neighbourhood at night. Whether that proposition is true for the population of English and Welsh adults in 1984 can be decided by testing hypothesis H_{11} which states that

$$\theta \neq 0$$

in said population, where θ is γ_i of model (8.23-24), for i = 1, 2, 3. The alternative to this hypothesis is hypothesis $\sim H_{11}$, according to which

$$\theta = 0$$

for English and Welsh adults in 1984. Let the terms $\hat{\theta}$, AVAR($\hat{\theta}_N$), and avar($\hat{\theta}_N$) be defined as they are for (6.3). Then if $\sim H_{11}$ is true, the sampling distribution of

$$\frac{\hat{\theta}}{\sqrt{\text{avar}(\hat{\theta}_N)}} \tag{9.28}$$

will be, asymptotically, standard normal under certain conditions. Those conditions are that large samples are taken, and that the values of $\hat{\theta}$ and avar($\hat{\theta}_N$) are consistent estimates of θ and AVAR($\hat{\theta}_N$) (Browne 1982, 95). That the sampling distribution of (9.28) is known under specifiable conditions when $\sim H_{11}$ is true makes it possible to corroborate H_{11}. A maximum of .05 for the probability of retaining H_{11} when $\sim H_{11}$ is true seems reasonable.

Model (9.25–27) implies that the association between experience of incivility and feeling unsafe while out alone at night is stronger when faith in the capacity of the community to control incivility is lacking. If that proposition was true for the population of adults in England and Wales in 1984, then the model would be sound in incorporating the term γ_i in a model of that population. That possibility can be evaluated empirically by testing hypothesis H_{11}, which states that

$$\theta \neq 0$$

for adults in England and Wales, where θ is γ_1 of equation (9.25). The alternative to that hypothesis is $\sim H_{11}$, which states that

$$\theta = 0.$$

Under $\sim H_{11}$, (9.28) will be a standard normal variate for large samples of the population of English and Welsh adults, provided the values of (9.28) in those samples are derived from values of $\hat{\theta}$ and avar($\hat{\theta}_N$) that are consistent estimates of θ and AVAR($\hat{\theta}_N$) (Browne 1982, 95). That property of (9.28) makes it possible to test H_{11}. A maximum probability of .05 or error in retaining H_{11} seemed tolerable.

Identification and Estimation

Models like (9.23-24) are always identified (cf. Bollen 1989, 96). The same is true of models like (9.25-27) (cf. Bollen 1989, 96).

The unknown terms of the models were estimated for the population of English and Welsh adults in 1984. The estimates were based on data in BCS84.RAW pertaining to the same participants in the 1984 *British Crime*

Surveys as those who were randomly selected for the purpose of estimating (9.18).

Values for these individuals on y were determined by assigning normal scores to their responses to the question they were asked about how safe they felt walking alone in the vicinity of their homes after dark. Values on x_1 were determined according to the formula (9.22). That formula defines a valid measure of x_1 for adult people in England and Wales if the manifest variables of model (9.15-17) cover statements of exposure to a representative sample of the actions those people regard as uncivil. To determine values on x_1 and x_1, normal scores were assigned to the survey participants' answers to the questions they were asked about whether their neighbours helped one another, and about whether their local police were doing a good job. For the values determined for x_1 and x_1 to be accepted as valid measures of those variables, it is necessary to assume that x_1 and x_1 have standard normal distributions. In the case of the values determined for x_1, it must also be assumed that statements about how helpful neighbours are to one another reflect opinions about those neighbours' willingness to try to prevent one another from being treated uncivilly.

Values for the second-, and fourth-order moments of y and x_1 through x_1 were estimated after cases missing data on y or on x_1 through x_1 were deleted. The asymptotic distribution-free method of weighted least squares was applied to those values to obtain estimates for (9.28) for the parameters of model (9.23-24). The estimates so obtained would be based on values of $\hat{\theta}$ and avar($\bar{\theta}_N$) that were consistent estimates of θ and AVAR($\hat{\theta}_N$) if the estimates of the fourth-order moments of y and x_1 through

x_4 were consistent (cf. Bollen 1989, 425–429; Browne 1982, 86–89; Jöreskog and Sörbom 1989, 19).

Second-order moments for y and x_1 through x_4 were estimated after deleting cases missing data on y and x_1 through x_4 and weighting the data for each case according to (8.53). The generalized least squares technique was applied to the estimated second-order moments of y and x_1 through x_4 to obtain estimates for (9.28) for evaluating H_{13} (cf. Jöreskog and Goldberger 1972, 244–51). This technique will produce values for (9.28) that are based on values of $\hat{\theta}$ and avar($\hat{\theta}_N$) that are consistent estimates of θ and AVAR($\hat{\theta}_N$) provided two conditions are fulfilled. The first condition is that the second-order moments used as a basis for estimating (9.28) are consistent estimates of the corresponding values for the population. The second condition is that the variables x_1 through x_4 are multivariate mesokurtic (Browne 1982, 82–83; Bollen 1989, 114; Cuttance 1987, 253). Whether that possibility corresponds with the facts can be tested by the property of (8.56) by which it is distributed as a standard normal variate in large samples for any set of multivariate mesokurtic variables (Mardia 1970, 527). No more than a probability of .1 was considered tolerable for error in accepting that (8.56) was a standard normal variate for the variables y and x_1 through x_4 in the population of adults in England and Wales.

Results

The number of cases that were missing data on at least one of the variables y and x_1 through x_1 was 344. That many cases represents 10 percent of the 3,341 cases that were selected for estimating model (9.23-24).

The estimates obtained for (9.28) for model (9.24-25) were 10.307 for $\theta = 1$, 5.218 for $\theta = 2$, and 1.630 for $\theta = 3$. The probability of the absolute values of these estimates in the sampling distribution of a standard normal variate are 1.998×10^{-11}, 1.813×10^{-1}, and .103 (SYSTAT for Windows Version 5, distribution functions). Thus, assuming that the estimates for (9.28) were based on values for $\bar{\theta}$ and $\text{avar}(\hat{\theta}_y)$ that were consistent estimates of θ and $\text{AVAR}(\hat{\theta}_y)$, $\sim H_{1t}$ could be rejected, and H_{1t} accepted for $\theta = 1$ and $\theta = 2$, but $\sim H_{1t}$ had to be retained and H_{1t} rejected for $\theta = 3$. These decisions are consistent with the possibility that both exposure to incivility and disenchantment with the community's enforcement of incivility by informal measures are linearly associated with feelings of being unsafe while out alone in one's neighbourhood at night. The decisions are not consistent with the possibility that lack of faith in the official guardianship of civility is linearly associated with feelings of being unsafe, however.

The estimate of (8.56) for the variables y and x_1 through x_1 of model (9.25-27) was .015. The probability of the absolute value of that estimate in the sampling distribution of a standard normal variate is .988 (SYSTAT for Windows Version 5, distribution functions). Therefore, it should not be denied that (8.56) is a standard normal variate for y and x_1 through x_1 in the population of adults in England and Wales.

The quantity (9.28) was estimated to be -0.758 for $\theta = \gamma_1$ in (9.25). The absolute value of this estimate in the sampling distribution of a standard normal variate is .448 (SYSTAT for Windows Version 5, distribution functions). So, under the assumption that the estimate for (9.28) was based on values for $\hat{\theta}$ and avar($\hat{\theta}_N$) that were consistent estimates of θ and AVAR($\hat{\theta}_N$), $\sim H_{11}$ was retained, and H_{11} was rejected. The rejection of H_{11} implies that the association between experience of incivility and feeling unsafe while out alone at night is not stronger when faith in the capacity of the community to control incivility is lacking.

The Experience of Incivility of Women and Elderly People and Their Faith in the Capacity of the Community to Prevent Uncivil Behaviour

Three moment structure models were used to compare the experience of incivility of women with that of men, and that of elderly people with that of younger adults. The models also made it possible to compare the faith that men and women, and elderly and younger people have in the community's capacity to prevent incivility. The three models that were used are referred to as *model (9.29-30)*, *model (9.32-34)*, and *model (8.35-38)*.

Model Specification

Model (9.29-30) is defined as follows:

(9.29)
$$\begin{bmatrix} y_1 \\ y_2 \\ y_3 \end{bmatrix} = \begin{bmatrix} \gamma_{1i} \\ \gamma_{2i} \\ \gamma_{3i} \end{bmatrix} x_i + \begin{bmatrix} \zeta_1 \\ \zeta_2 \\ \zeta_3 \end{bmatrix}, \text{ for } i = 1, 2$$

(9.30)
$$E(y_i) = E(x_j) = E(\zeta_i) = 0, \text{ for } i = 1, 2, 3; \text{ and } j = 1, 2, 3$$

The term γ_{ji} of equation (9.29) denotes a constant, for $i = 1, 2$, and $j = 1, 2, 3$. The terms y_1, y_2, and y_3 of that equation correspond in their meanings with the terms x_1, x_2, and x_3 of equation (9.23). The terms x_1 and x_2 of equation (9.29) represent the after the fact probability of a person being female, and the after the fact probability of a person being elderly. The term ζ_i represents all of the factors affecting y_i so that

$$E(x_j \zeta_i) = 0, \text{ for } i = 1, 2, 3; \text{ and } j = 1, 2.$$

Model (9.31-34) is defined by equations (9.31) through (9.34):

(9.31) $$y^g = \begin{bmatrix}\gamma_1^g & \gamma_2^g & \gamma_3^g & \gamma_4^g\end{bmatrix}\begin{bmatrix}x_1^g \\ x_2^g \\ x_3^g \\ x_4^g\end{bmatrix} + \zeta^g, \text{ for } g = 1, 2$$

(9.32) $$x_4 = x_1 \times x_2 \times x_3$$

(9.33) $$\gamma_4^1 = \gamma_4^2$$

(9.34) $$E(y^g) = E(x_i^g) = E(\zeta^g) = 0, \text{ for } g = 1, 2, \text{ and } i = 1, 2, 3, 4$$

Model (9.35-38) is defined by (9.35) through (9.38):

(9.35) $$y^g = \begin{bmatrix}\gamma_1^g & \gamma_2^g & \gamma_3^g & \gamma_4^g\end{bmatrix}\begin{bmatrix}x_1^g \\ x_2^g \\ x_3^g \\ x_4^g\end{bmatrix} + \zeta^g, \text{ for } g = 3, 4$$

(9.36) $$x_4 = x_1 \times x_2 \times x_3$$

(9.37) $$\gamma_4^3 = \gamma_4^4$$

(9.38) $$E(y^g) = E(x_i^g) = E(\zeta^g) = 0, \text{ for } g = 1, 2, \text{ and } i = 1, 2, 3, 4$$

In equations (9.31) through (9.38), the variable g is a natural number assigned to all persons in a certain sex or age category. The number *1* was assigned to males, and the number *2* was assigned to females. People who were younger than sixty-five years of age were assigned the number *3*, and people who were sixty-five years of age or older were assigned the number *4*. The term γ_i^g in equations (9.31) through (9.38) is a constant, for g, i = 1, 2, 3, 4. The term y^g corresponds in its meaning to the term y in model (9.23-24), while the terms x_1^g, x_1^g, and x_1^g correspond in their meanings with the terms x_1, x_1, and x_1. The term ζ^g represents all of the variables associated with y^g so that

$$E(x_i^g \zeta^g) = 0, \quad \text{for } g, i = 1, 2, 3, 4.$$

Explication

Model (9.29-30) says that exposure to incivility and faith in the community's capacity to prevent incivility vary according to whether a person is male or female, and according to whether a person is elderly.

If the model is a sound representation of the state of affairs in a population, then it should be the case that

(9.39) $$\theta \neq 0,$$

in that population, where $\theta = \gamma_{ji}$ of equation (9.29), for $i = 1, 2$, and $j = 1, 2, 3$. Let H_{11} denote the hypothesis that (9.39) is true for the population of adults in England and Wales in 1984, and let $\sim H_{11}$ denote the alternative hypothesis that

$$\theta = 0$$

in said population. If $\hat{\theta}$, AVAR($\hat{\theta}_{ji}$), and avar($\hat{\theta}_{ji}$) are defined as they are for (6.3), then, under $\sim H_{11}$, (9.28) will be, asymptotically, a standard normal variate, provided certain conditions are fulfilled. The conditions are that large samples are taken, and that the values of $\hat{\theta}$ and avar($\hat{\theta}_{ji}$) are consistent estimates of θ and AVAR($\hat{\theta}_{ji}$) (Browne 1982, 95). That the properties of (9.28) are known under specifiable conditions when $\sim H_{11}$ is true makes it feasible to test H_{11}. A maximum of .05 for the probability of being mistaken in retaining H_{11} seemed reasonable.

Models (9.31-34) and (9.35-38) say that how much the association between experience of incivility and feelings of insecurity is affected by lack of faith in the community's capacity to control incivility depends on whether one is a man or a woman. Model (9.35-38) says that it also depends on whether one is elderly. Whether the models are true representations of the state of affairs in the population of adults in England and Wales in 1984 was determined by testing their completeness for that population. If the models were complete for adults in England and Wales in 1984, then it would be the case that

(9.40) $$\operatorname*{plim}_{N \to \infty} F(\theta) \neq 0$$

in that population, where $F(\theta)$ denotes the value of an asymptotic distribution-free discrepancy function for models (9.31-34) and (9.35-38). Let $H_{1\$}$ be the hypothesis that (9.40) is true for models (9.31-34) and (9.35-38) in said population, and let $\sim H_{1\$}$ be the alternative hypothesis that (9.40) is false. Under $\sim H_{1\$}$, the sampling distribution of (8.22) is a chi-square variate for large, simple random samples. A level of .1 was thought to be an acceptable maximum for the probability of mistakenly rejecting $\sim H_{1\$}$ (cf. Hayduk 1987, 161).

Identification and Estimation

Models like (9.29-30) are always identified (cf. Bollen 1989, 96). So are models like (9.31-34) and (9.35-38) (cf. Bollen 1989, 96).

The unknown terms of the models were estimated for the population of adults in England and Wales. The estimates were based on data in BCS84.RAW pertaining to the same individuals as those who were randomly selected from among the participants in the 1984 *British Crime Surveys* for the purpose of estimating (9.18)

The variables representing feelings of insecurity and experience of incivility in models (9.29–30), (9.31–34) and (9.35–38) were measured in the same way as were the corresponding variables of (9.23–24). Those representing disenchantment with the will of the community to enforce civil behaviour informally, and lack of faith in the official guardianship of civility were also measured in the same way as were the corresponding variables of (9.23–24).

Cases missing data on the variables y_1, y_2, y_3, x_1, and x_2 of model (9.29–30) were eliminated list-wise. So were the cases missing data on the variables y^g, and x_1^g through x_4^g of models (9.31–34) and (9.35–38).

In order to estimate model (9.29–30), the asymptotic distribution-free method of weighted least squares was applied to estimates of the second-, and fourth-order moments of the variables y_1, y_2, y_3, x_1, and x_2. The estimates obtained by that method would be based on values of $\hat{\theta}$ and avar($\hat{\theta}_y$) that were consistent estimates of θ and AVAR($\hat{\theta}_y$) if the estimates of the fourth-order moments of y_1, y_2, y_3, x_1, and x_2 were consistent (cf. Bollen 1989, 425–429; Browne 1982, 86–89; Jöreskog and Sörbom 1989, 19).

In estimating model (9.31–34), estimates were obtained for the second-order moments both of the variables y^1, and x_1^1 through x_4^1 and of the variables y^2, and x_1^2 through x_4^2, the data for each case being weighted according to (8.53). Then the method of generalized least squares was applied to the estimated second-order moments in order to estimate the unknown terms of model (9.31-34).

The estimation of model (9.35-38) proceeded by obtaining estimates for the second-order moments of the variables y^3, and x_1^3 through x_4^3, and the variables y^4, and x_1^4 through x_4^4. The estimates were obtained with the data for each case weighted according to (8.53). The method of generalized least-squares was applied to the estimated second-order moments of y^3, and x_1^3 through x_4^3, and y^4, and x_1^4 through x_4^4. to get estimates of the unknown terms of model (9.35-38).

Results

The number of cases available for estimating model (9.29-30) after deleting the records for those that were missing data was 2,980. The weighted least squares estimates of (9.28) for that model appear in table 9-4, along with the probabilities of the absolute values of those estimates in the sampling distributions of standard normal variates. Based on these probabilities, and assuming that the estimates of (9.28) were derived from values of $\hat{\theta}$ and avar($\hat{\theta}_N$) that were consistent estimates of θ and AVAR($\hat{\theta}_N$), $\sim H_{14}$ was retained for all values of the term θ in (9.39). This decision implies that exposure to incivility and faith in the community's capacity to prevent incivility do not vary according to whether a person is male or female, or according to whether a person is elderly.

Table 9-5 shows the estimates that were obtained for (8.56) for models (9.31-34) and (9.35-38), together with the probabilities of the absolute

Table 9-4. Estimates of (9.28) for Various Values of θ in (9.39), Possible Significance of θ, and Probabilities of the Estimates of (9.28) in a Standard Normal Distribution, Adults in England and Wales in 1984 (N = 2,980), Weighted Least Squares Estimates from Second-Order Moments

θ	Possible Significance of θ	Estimate of (9.28)	Probability
γ_{11}	Change in the Expected Value of y_1 Associated with Unit Increments in the Expected Value of x_1	0.337	.736
γ_{11}	Change in the Expected Value of y_1 Associated with Unit Increments in the Expected Value of x_1	-1.575	.115

Table 9-4. *Continued.*

θ	Possible Significance of θ	Estimate of (9.28)	Probability
γ_{11}	Change in the Expected Value of y_1 Associated with Unit Increments in the Expected Value of x_1	−0.247	.805
γ_{11}	Change in the Expected Value of y_1 Associated with Unit Increments in the Expected Value of x_1	−0.375	.708

Table 9-5. Estimates of (8.56) for Various Values of g in (9.31) and (9.35), Significance of g, Values of N for the Estimates, and Probabilities of the Estimates in a Standard Normal Distribution, Adults in England and Wales in 1984

g	Significance of g	N	Estimate of (8.56)	Probability
1	Number Assigned to Males	1,475	0.015	.988
2	Number Assigned to Females	1,523	0.015	.988
3	Number Assigned to People Younger Than Sixty-five	2,538	0.015	.988
4	Number Assigned to People Sixty-five or Older	477	0.015	.988

values of the estimates in the sampling distribution of a standard normal variate. These figures justified retaining the hypothesis that (8.56) was a standard normal variate for y^g and x_1^g through x_4^g for adults in England and Wales in 1984, where g = 1, 2, 3, 4.

The estimate of (8.55) for model (9.31-34) was 0.18. For model (9.35-38), the estimate was 3.49. The probabilities of 0.18 and 3.49 in the sampling distribution of a chi-square variate with one degree of freedom are .699 and .062. Based on these probabilities, and assuming that the estimates of (8.55) were consistent estimates of $F(\theta)$ in (9.40), $-H_{13}$ was retained for model (9.31-34) and rejected for model (9.35-38). Thus, H_{13} was rejected for model (9.31-34), but accepted for model (9.35-38). These decisions imply that how much the association between experience of incivility and feelings of insecurity is affected by doubts about the community's control over incivility depends on whether one is elderly, but not on whether one is a woman.

Findings Concerning Position in Society

Measuring Position in Society

For the sake of measuring position in society, it may be wise to follow Kemper (1978) in conceiving positions in society as positions of power and status, for a way of measuring power and status has been worked out. Specifically, take it that

(9.41) $$p(D) = \gamma_{p(P)}p(P) + \gamma_{p(S)}p(S),$$

where $p(x)$ and D are defined as they are for (9.2), $\gamma_{p(P)}$ and $\gamma_{p(S)}$ are constants, P denotes a person's power, and S denotes a person's status. Values for $p(P)$ in (9.41) can be assigned according to the formula

(9.42) $$p(P) = \frac{\sum_{i=1}^{t} p_i\, p(I_i)}{t},$$

In (9.42), t is the number of terms in a given language that denote identities people may assume. The variable p_i is the potency attributed to the identity signified by the ith term, while $p(I_i)$ is one's subjective probability of having that identity (cf. Kemper and Collins 1990, 40; Smith-Lovin 1979, 35). Values for $p(S)$ in (9.41) can be assigned according to

(8.43) $$p(S) = \frac{\sum_{i=1}^{t} e_i\, p(I_i)}{t},$$

where e_i is the evaluation of the identity denoted by the ith of the t terms for identities in a particular language (Kemper and Collins 1990, 40). The potency and the value that the speakers of a language attribute to any identity denoted by a term in their vocabulary can be quantified by having them rate that term on various semantic differential scales (Heise 1979, 50–51, 58–59). The scales needed for determining the potency imputed to an identity would be formed by placing seven intervals between the elements of the three pairs of adjectives *powerful* and *powerless*, *strong* and *weak*, and *big* and *little* (Heise 1979, 50–51). The scales needed for determining the value ascribed to the identity would be formed by interspersing seven intervals between the elements of the four pairs of adjectives *good* and *bad*, *helpful* and *unhelpful*, *nice* and *awful*, and *sweet* and *sour* (Heise 1979, 58–59). Estimating the first moments of the sums of the speaker's ratings for a term denoting an identity on the two sets of semantic differential scales would serve to fix the potency and the value of the identity in question (cf. Heise 1979, 50–51).

Thus, the position in society people attribute to themselves can be measured according to (9.41), (9.42), and (9.43). Yet, this procedure is not readily implementable, unfortunately, due to the limitations of the available data. Although lists of values for p_i and e_i have been formulated for several natural languages, none that I am aware of was derived from a probability sample of the speakers of the language in question. The lists are therefore subject to an unknown quantity of bias. The lists also do not always cover all of the terms for identities in the vocabulary of the language for which they formulated. Anyway, the positions in society people attribute to themselves can only be determined exactly by (9.41), (9.42), and (9.43) given a complete set of values for $p(I_i)$. Obtaining a complete set of values for $p(I_i)$ would require having people state their subjective probabilities of having each identity for which there is a term in their vocabulary. As far as I know, that has never been done for any representative sample of the speakers of any natural language. So, the data necessary for measuring position in society properly has never been gathered.

A rough measure of position in society for the population of adults in England and Wales was made according to (9.44) and (9.45):

(9.44) $$p(P)^g = \frac{\sum_{i=1}^{t'} p_i^g p(I_i)}{t'}, \text{ where } g = 1, 2$$

(9.45) $$p(S)^g = \frac{\sum_{i=1}^{t'} e_i^g p(I_i)}{t'}, \text{ where } g = 1, 2$$

The term I_i in (9.44) and (9.45) represents the *i*th of t' identities that a respondent to the 1984 *British Crime Surveys* acknowledged or rejected as his or hers. Those t' identities are sexual identities, marital identities, and socio-economic group identities. The terms p_i^g and e_i^g are the potency and value attributed to I_i by the members of group g, g being *1* for men and *2* for women.

Values of p_i^g and e_i^g in (9.43) and (9.45) were determined based on a list of potency and value ratings for various terms obtained from a convenience sample of 319 Catholic teenagers in Belfast, Northern Ireland

(Neil J. Mackinnon, letter, 12 May 1992). The ratings were ascertained by the method of the semantic differential, and are listed separately for males and females, each listing being the first moment of either group's semantic differential scores for a given term. The values of p_i^g and e_i^g were determined by finding the first moment of the potency and value ratings listed for any term synonymous with I_i. Details of this procedure are given in table 9-6.

The Existence of Associations between Positions in Society and Feelings of Insecurity While Out Alone at Night

A moment structure model was written to test for the possibility that positions in society are associated with feeling unsafe while out alone at night. The model in question is referred to as *model (9.46-47).*

Model Specification

Model (9.46-47) is defined by two equations, as follows:

(9.46) $$y = \gamma_i x_i + \zeta, \text{ for } i = 1, 2$$

Table 9-6. Identities of Males and Females Covered by 1984 *British Crime Surveys*, Synonymous Terms Given Potency and Value Ratings by Catholic Teenagers in Belfast, Northern Ireland (N = 319), and Values for p_i^g and e_i^g

Males					
Identity	Term	Potency Rating	Value Rating	p_i^g	e_i^g
Male	Male	1.76	1.31	1.76	1.31
Never Married	Bachelor	1.35	1.14	1.35	1.14
Married	Husband	1.345	1.95	1.345	1.95
Widowed	Widower	-1.03	0.89	-1.03	0.89
Socio-economic Group One	Alderman	0.41	0.68		
	Director	2.57	0.11		
	Employer	2.21	1.13		

Table 9-6. *Continued.*

		Males			
Identity	Term	Potency Rating	Value Rating	p_i^g	e_i^g
	Head-master	2.20	0.36		
	School Princi-pal	1.54	0.84	1.786	0.624
Socio-economic Group Two	Employer	2.21	1.13		
	Inn-keeper	0.84	1.63		
	Merchant	1.64	0.59		
	News-agent	-0.30	1.49		
	Photo-grapher	0.74	1.31		
	Propri-etor	-0.04	0.83		

Table 9-6. *Continued.*

		Males			
Identity	Term	Potency Rating	Value Rating	p_i^g	e_i^g
	Publican	1.46	0.82		
	Shop-keeper	-0.145	1.145		
	Shoe-maker	0.01	1.05		
	Under-taker	1.54	0.84	1.316	1.06
Socio-economic Group Three	Chemist	0.68	1.86		
	Doctor	1.73	2.025		
	Lawyer	1.31	0.53		
	Prof-essional	0.48	0.65		
	Psych-ologist	-1	-0.95	0.64	0.823

Table 9-6. *Continued.*

		Males			
Identity	Term	Potency Rating	Value Rating	p_i^g	e_i^g
Socio-economic Group Four	Clergy-man	0.69	1.56		
	Justice of the Peace	1	-0.14		
	Lecturer	1.26	0.68		
	Magis-trate	2.2	-0.11		
	Prof-essional	0.48	0.65		
	Profes-sor	1.61	1.33		
	Scien-tist	0.97	0.56	1.173	0.647

Table 9-6. *Continued.*

		Males			
Identity	Term	Potency Rating	Value Rating	p_i^g	e_i^g
Socio-economic Group Five	Artist	0.89	1.53		
	Author	0.57	1.02		
	Journa-list	1.06	0.03		
	Nurse	1.82	2.71		
	News-caster	-0.08	1.15		
	Teacher	0.9	1.68	0.86	1.353
Socio-economic Group Six	Police-man	1.92	-0.39	1.92	-0.39

Table 9-6. *Continued.*

		Males			
Identity	Term	Potency Rating	Value Rating	p_i^g	e_i^g
Socio-economic Group Seven	Atten-dant	0.21	1.04		
	Barman	0.87	1.31		
	Tailor	-0.3	0.98	0.26	1.11
Socio-economic Group Eight	Overseer	0.96	-0.11	0.96	-0.11
Socio-economic Group Nine	Bus Driver	0.01	0.47		
	Chauf-feur	-1.15	0.05		

Table 9-6. *Continued.*

		Males			
Identity	Term	Potency Rating	Value Rating	p_i^g	e_i^g
	Electrician	1.46	1.05		
	Lorry-Driver	0.23	1.51		
	Mason	1.27	1.13		
	Milkman	-0.3	1.33		
	Miner	0.73	1.01		
	Taxicab Driver	0.12	1.6	0.33	1.014
Socio-economic Group Ten	Bailiff	1.66	0.71		
	Caretaker	-0.37	0.56		

Table 9-6. *Continued.*

		Males			
Identity	Term	Potency Rating	Value Rating	p_i^g	e_i^g
	Custo-dian	-0.78	0.62		
	Watchman	0.48	0.52	0.99	0.2475
Socio-economic Group Eleven	House-keeper	-0.36	0.56		
	Labourer	1.05	0.86		
	Postman	1.84	0.14		
	Servant	-1.27	1.54	-0.11	1.2

Table 9-6. *Continued.*

		Males			
Identity	Term	Potency Rating	Value Rating	p_i^g	e_i^g
Socio-economic Group Twelve	Inn-keeper	0.84	1.63		
	Merchant	1.64	0.59		
	News-agent	-0.30	1.49		
	Photo-grapher	0.74	1.31		
	Propri-etor	-0.04	0.83		
	Publican	1.46	0.82		
	Shop-keeper	-0.145	1.145		
	Shoe-maker	0.01	1.05		

Table 9-6. *Continued.*

		Males			
Identity	Term	Potency Rating	Value Rating	p_i^ξ	e_i^ξ
	Under-taker	1.54	0.84	0.422	0.993
Socio-economic Group Thirteen	Farmer	1.30	1.21		
	Overseer	0.96	-0.69	1.13	0.26
Socio-economic Group Fourteen	Farmer	1.30	1.21		
	Peasant	-1.56	1.38	-0.13	1.295
Socio-economic Group Fifteen	Warden	-0.21	-0.29	-0.21	-0.29

Table 9-6. *Continued.*

		Males			
Identity	Term	Potency Rating	Value Rating	p_i^g	e_i^g
Socio-economic Group Sixteen	Soldier	0.17	-0.59	0.17	-0.59
Socio-economic Group of Economically Inactive Persons Categories One and Three	Pen-sioner	-1.52	1.40	-1.52	1.4

Table 9-6. *Continued.*

		Males			
Identity	Term	Potency Rating	Value Rating	p_i^g	v_i^g
Socio-economic Group of Economically Inactive Persons Category Two	Student	-0.48	0.64	-0.48	0.64

Table 9-6. *Continued.*

		Females			
Identity	Term	Potency Rating	Value Rating	p_i^g	e_i^g
Female	Female	1.21	1.50	1.21	1.50
Never Married	Bachelor	-0.01	0.84	-0.01	0.84
Married	Wife	1.23	2.205	1.23	2.205
Widowed	Widow	-0.86	1.18	-0.86	1.18
Socio-economic Group One	Alderman	0.73	1.41		
	Director	2.48	1.15		
	Employer	1.63	1.27		

Table 9-6. *Continued.*

Identity	Term	Females Potency Rating	Value Rating	p_i^f	e_i^f
	Head-mistress	2.60	-0.01		
	School Princi-pal	2.33	0.09	1.954	0.782
Socio-economic Group Two	Employer	1.63	1.27		
	Inn-keeper	0.69	1.01		
	Merchant	0.31	0.39		
	News-agent	-0.09	0.56		
	Photo-grapher	0.34	0.89		
	Propri-etor	1.29	0.07		

Table 9–6. *Continued.*

		Females			
Identity	Term	Potency Rating	Value Rating	p_i^{ξ}	e_i^{ξ}
	Publican	0.16	0.09		
	Shop-keeper	0.385	1.025		
	Shoe-maker	-0.63	1.91		
	Under-taker	-0.44	0.38	0.927	0.944
Socio-economic Group Three	Chemist	-0.04	1.19		
	Doctor	2.43	2.335		
	Lawyer	2.02	1		
	Prof-essional	1.48	0.43		
	Psych-ologist	-0.75	-0.44	1.028	0.903

Table 9-6. *Continued.*

		Females			
Identity	Term	Potency Rating	Value Rating	p_i^ξ	e_i^ξ
Socio-economic Group Four	Justice of the Peace	1.53	-0.06		
	Lecturer	1.04	1.65		
	Magistrate	1.84	-0.79		
	Professional	1.48	0.43		
	Professor	1.80	1.73		
	Scientist	2.15	1.03	1.64	0.665

Table 9-6. *Continued.*

		Females			
Identity	Term	Potency Rating	Value Rating	p_i^g	e_i^g
Socio-economic Group Five	Artist	0.56	1.39		
	Author	0.42	1.38		
	Journa-list	1.16	1.05		
	Nurse	1.08	2.86		
	News-caster	0.38	1.77		
	Teacher	1.53	1.58	0.855	1.672
Socio-economic Group Six	Police-woman	0.81	0.43	0.81	0.43

Table 9-6. *Continued.*

		Females			
Identity	Term	Potency Rating	Value Rating	p_i^f	e_i^f
Socio-economic Group Seven	Atten-dant	-0.30	1.91		
	Tailor	-0.34	1.52	-0.32	1.715
Socio-economic Group Eight	Overseer	0.8	-1.49	0.8	-1.49
Socio-economic Group Nine	Bus Driver	-0.33	1.65		
	Chauf-feur	-0.66	1.77		
	Electri-cian	0.86	1.08		

Table 9-6. *Continued.*

		Females			
Identity	Term	Potency Rating	Value Rating	p_i^g	e_i^g
	Lorry-Driver	0.49	0.9		
	Mason	0.46	0.23		
	Miner	0.88	1.15		
	Taxicab Driver	0.18	0.94	0.261	1.103
Socio-economic Group Ten	Bailiff	1.49	-0.66		
	Care-taker	-0.19	1.87		

Table 9-6. *Continued.*

		Females			
Identity	Term	Potency Rating	Value Rating	p_i^ℓ	e_i^ℓ
	Custo-dian	1.65	-0.08	0.983	0.377
Socio-economic Group Eleven	House-keeper	0.98	1.74		
	Labourer	0.44	1.3		
	Servant	-1.85	1.04	-0.143	1.36

Table 9-6. *Continued.*

		Females			
Identity	Term	Potency Rating	Value Rating	p_i^g	e_i^g
Socio-economic Group Twelve	Inn-keeper	0.69	1.01		
	Merchant	0.31	0.39		
	News-agent	-0.09	0.56		
	Photo-grapher	0.34	0.89		
	Propri-etor	1.29	0.07		
	Publican	0.16	0.09		
	Shop-keeper	0.385	1.025		
	Shoe-maker	-0.63	1.91		

Table 9-6. *Continued.*

		Females			
Identity	Term	Potency Rating	Value Rating	p_i^g	e_i^g
	Under-taker	-0.44	-0.38	0.224	0.618
Socio-economic Group Thirteen	Farmer	0.73	1.42		
	Overseer	0.80	-1.49	0.765	-0.035
Socio-economic Group Fourteen	Farmer	0.73	1.42		
	Peasant	-1.09	1.92	-0.18	1.67
Socio-economic Group Fifteen	Warden	0.74	-0.45	0.74	-0.45

Table 9-6. *Continued.*

		Females			
Identity	Term	Potency Rating	Value Rating	p_i^g	e_i^g
Socio-economic Group Sixteen	Soldier	0.95	-0.79	0.95	-0.79
Socio-economic Group of Econom-ically Inactive Persons Categor-ies One and Three	Pen-sioner	-1.15	1.34	-1.15	1.34

Table 9-6. *Continued.*

		Females			
Identity	Term	Potency Rating	Value Rating	p_i^g	e_i^g
Socio-economic Group of Economically Inactive Persons Category Two	Student	0.18	1.61	0.18	1.61

(9.47) $$E(y) = E(x_i) = E(\zeta) = 0, \text{ for } i = 1, 2$$

In equation (9.46), the term γ_i is a constant, for $i = 1,2$. The terms y, x_i, and ζ are all variables. The variable y covers feelings of insecurity while out alone in the neighbourhood at night. The variables x_1 and x_2 cover perceived positions in society. The variable x_1 ranges over variations in the power of the identities people attribute to themselves, while x_2 ranges over variations in the status of those identities. The variable ζ covers all of the factors affecting y so that

$$E(x_i\zeta) = 0, \text{ for } i = 1, 2.$$

Explication

Model (9.46–47) proposes that how safe a person feels while out alone at night is linearly associated with the power and status of the identities he or she claims. This proposition would be true for a given population if (9.5) was true, and if the variable y of (9.5) was a linear function of the variable $p(H)$ of the same equation. Whether (9.46–47) is a true model of the state of affairs in the population of English and Welsh adults in 1984 was decided by testing its soundness for that population. The soundness of (9.46–47) for the population of adults in England and Wales 1984 was formulated as hypothesis H_{11}, which states that

$$\theta \neq 0, \tag{9.48}$$

for $\theta = \gamma_1$ and γ_2 of (9.46) for adults in the said population. The alternative to H_{11} is $\sim H_{11}$, according to which

$$\theta = 0$$

for adults in England and Wales in 1984. Take $\hat{\theta}$ be an estimate of θ in (9.48), take $\mathrm{AVAR}(\hat{\theta}_y)$ to be the asymptotic variance of $\hat{\theta}$, and take $\mathrm{avar}(\hat{\theta}_y)$ to be a sample estimate of $\mathrm{AVAR}(\hat{\theta}_y)$, the asymptotic variance of $\hat{\theta}$. Then, under $\sim H_{1t}$, (9.28) will be, asymptotically, a standard normal variate for large samples, provided $\hat{\theta}$ and $\mathrm{avar}(\hat{\theta}_y)$ are consistent estimates of θ and $\mathrm{AVAR}(\hat{\theta}_y)$ (Browne 1982, 95). This property of (9.28) made it possible to test H_{1t}. A maximum of .05 for the probability of error in accepting H_{1t} was thought to be acceptable.

Identification and Estimation

The unknown terms of models like (9.46–47) are always identified (cf. Bollen 1989, 96). To estimate those terms for the population of adults in England and Wales in 1984, the asymptotic distribution-free method of weighted least squares was used. The method was applied to statistics pertaining to the same participants in the 1984 *British Crime Surveys* as those who were randomly selected from among the participants in the for the purpose of estimating (9.18). The statistics in question were estimates of the second-, and fourth-order moments of the variables y, x_1 and x_1 of model (9.46–47). Those estimates were obtained using data in BCS84.RAW. The variable y was measured by assigning normal scores to the survey participants' answers to the question they were asked about how safe they felt out alone at night. The variables x_1 and x_2 were measured according to (9.44) and (9.45). The records of individuals missing data on y, x_1 or x_2 were deleted.

Given the procedures used to estimate (9.46-47), the estimates obtained for (9.28) may be estimates derived from consistent estimates of θ and AVAR($\hat{\theta}_y$). That would be the case if the estimates of the fourth-order moments of y, x_1 and x_2 that were used as a basis for estimating (9.46-47) were consistent estimates of the corresponding values for the population (cf. Bollen 1989, 425-429; Browne 1982, 86-89; Jöreskog and Sörbom 1989, 19).

Results

After deleting the records of individuals missing data on y, x_1 or x_2, 3,327 cases were available for estimating model (9.46-47). The estimates obtained for (9.28) were 5.218 for $\theta = \gamma_1$ and 7.498 for $\theta = \gamma_2$. The probabilities of the absolute values of these estimates in the sampling distribution of a standard normal variate are 1.813×10^{-7} and 6.484×10^{-14} (SYSTAT for Windows Version 5, distribution functions). Given these results, $\sim H_{1t}$ was rejected, and H_{1t} was accepted for all values of θ in (9.48) under the assumption that the estimates of (9.28) were based on consistent estimates of θ and AVAR($\hat{\theta}_y$) for (9.48). This decision means that how safe people feel while out alone at night may be linearly associated with the power and statues of the identities they claim.

The Form of the Associations between Position in Society and Feelings of Insecurity While Out Alone at Night

An additional moment structure model was written to check for nonlinearities in the associations between the 1984 *British Crime Survey* participants' perceived positions in society and how safe they felt while out alone in their neighbourhoods at night. Also, the values of Pearson coefficients of correlation for these associations were compared with the values of the square-roots of unbiased correlation ratios. Square-roots of unbiased correlation ratios indicate the strengths of monotonic associations between pairs of variables that are monotonically associated.

Model Specification

The model that was written is referred to as *model (9.49-53).* It is defined as follows:

(9.49) $$y* = y_1 + 2y_2 + 3y_3$$

(9.50) $$y_1 = \gamma_{1i}\, x_i + \zeta_1, \text{ for } i = 1, 2$$

$$y_2 = \gamma_{2i} x_i + \zeta_2, \text{ for } i = 1, 2 \tag{9.51}$$

$$y_3 = \gamma_{3i} x_i + \zeta_3, \text{ for } i = 1, 2 \tag{9.52}$$

$$E(y*) = E(y_j) = E(x_i) = E(\zeta_j) = 0, \text{ for } i = 1, 2; \text{ and } j = 1, 2, 3 \tag{9.53}$$

Here, γ_{ji} is a constant, for $i = 1, 2$, and $j = 1, 2, 3$. The term $y*$ represents the survey participants' answers to the question about how safe they felt walking alone after dark. The terms y_1, y_2, and y_3 represent the probabilities of the participants having said *fairly safe*, *a bit unsafe*, or *very unsafe* for $y*$. The term x_1 represents values of the quantity (9.43), while the term x_2 represents values of the quantity (9.45). The term ζ_j represents anything that determines the value of y_j of which it is true that

$$E(x_i \, \zeta_j) = 0 \text{ for } i = 1, 2, \text{ and } j = 1, 2, 3.$$

Explication

Assume that the variables x_1 and x_2 of model (9.49–53) indicate the power and status of the identities survey respondents attribute to themselves. Then model (9.49–53) states that variations in the probabilities of survey participants having experienced various levels of insecurity were associated with variations in the power and status of their identities. If the associations varied in strength across the levels of insecurity, then that may have been due to nonlinearities in the relationships between the power and status of the respondents' identities and their feelings of insecurity. It may also have been due to how the scales for measuring the power and status of identities were calibrated, or to how the range of feelings of insecurity was divided into levels (Hartwig and Dearing 1979, 57).

Identification and Estimation

All of the unknown terms of models (9.49–53) are in equations (9.50) through (9.52), and equations like these are always identified (Bollen 1989, 96). The model was estimated by applying the confirmatory maximum likelihood method to the second-order moments of the model variables (cf. Jöreskog 1969, 1973). Those statistical moments were estimated from the 1984 *British Crime Surveys* records in BCS84.RAW for the same 3,341 respondents as those who were randomly-selected for the estimation of (9.18). Records for the respondents who were missing data on variables y*, and x_1 and x_1 were deleted pair-wise. The data in the remaining records were weighted according to (8.52). Confirmatory maximum likelihood estimates for the unknowns of model (9.49–53) based on the estimated second-order moments of the model variables will be consistent provided the second-order moments were estimated using a sample true to the population (cf. Jöreskog and Sörbom 1989, 20). That condition will have been fulfilled if the factors deciding who was included in the final sample all satisfied the definition of the term ζ_j of model (9.49-53), for $j = 1, 2, 3$.

Results

Table 9-7 gives estimates of the Pearson coefficients of correlation for several variables of model (9.49-53), based on the confirmatory maximum likelihood estimates of the unknown terms of the model. Variable x_1 was negatively associated with y_1, y_1, and y_1. Its association with y_1 was eighteen times stronger than its association with y_1, but barely twice as strong as its association with y_1. The associations of x_1 with y_1, y_1, and y_1 were all positive. The association between x_1 and y_1 was more than $1\frac{1}{2}$-times as strong as the association between x_1 and y_1, but the strengths of the associations between x_1 and y_1 and x_1 and y_1 were about equal.

The square-root of the unbiased correlation ratio for x_1 and y^* was determined to be .382. The corresponding statistic for x_1 and y^* was determined to be .135.

Table 9-7. Estimates of Pearson Coefficients of Correlation for Variables of Model (9.49–53), English and Welsh Adults in 1984 (N = 3,333), Confirmatory Maximum Likelihood Estimates from Second-Order Moments, Pair-wise Deletion

Variables	Estimate
x_1 and y^*	− .380
x_1 and y_1	− .015
x_1 and y_2	− .137
x_1 and y_3	− .264
x_2 and y^*	.117
x_2 and y_1	.034
x_2 and y_2	.060
x_2 and y_3	.061

The Positions in Society of Women and Elderly People

A moment structure model was written for the purpose of obtaining evidence that men and women and elderly and younger people tend to perceive themselves as occupying different positions in society. The model in question is model (9.54–55).

Model Specification

Model (9.54–55) is defined by two equations:

(9.54) $$\begin{bmatrix} y_1 \\ y_2 \end{bmatrix} = \begin{bmatrix} \gamma_{1i} \\ \gamma_{2i} \end{bmatrix} x_i + \begin{bmatrix} \zeta_1 \\ \zeta_2 \end{bmatrix}, \text{ for } i = 1, 2$$

(9.55) $$E(y_j) = E(x_i) = E(\zeta_j) = 0, \text{ for } i, j = 1, 2$$

The term γ_{ji} of equation (9.54) is a constant, for i, j = 1, 2. The terms y_1 and y_1, cover variations in the power of the identities people attribute to themselves, and variations in the status of those identities. The terms x_1 and x_1 represent the after the fact probability of a person being female, and the after the fact probability of a person being elderly. The term ζ_i represents all of the factors affecting y_i so that

$$E(x_j \zeta_i) = 0, \text{ for } i, j = 1, 2.$$

Explication

Model (9.54–55) proposes that the power and status of the positions one attributes to oneself depend on whether one is male or female and on whether one is an elderly person or a younger person. If the model is sound for the population of adults in England and Wales in 1984, then it should be the case that

$$\theta \neq 0 \tag{9.56}$$

in that population, where $\theta = \gamma_{ji}$ of equation (9.54). Let H_{11} be the hypothesis that (9.56) is true for the population of adults in England and Wales in 1984, and let $\sim H_{11}$ be the alternative hypothesis that (9.56) is false for that population. Hypothesis H_{11} was tested using the property of (9.28) by which (9.28) is, asymptotically, a standard normal variate under $\sim H_{11}$ provided certain conditions are fulfilled. The conditions are that large samples are drawn, and that the sample values of (9.28) are based on consistent estimates of θ and of the asymptotic variances of the estimates of θ (Browne 1982, 95; Bollen 1989, 469). A maximum level of .05 was considered acceptable for the probability of being in error in rejecting $\sim H_{11}$.

Identification and Estimation

To estimate (9.28) for the population of adults in England and Wales in 1984, data in the file BCS84.RAW were used. The data pertained to the same subgroup of participants in the 1984 *British Crime Surveys* as those who were randomly selected for the purpose of estimating (9.18). Values for these individuals on y_1 and y_2 were assigned according to (9.44) and (9.45). Records for those cases that were missing data on y_1, y_2, x_1, or x_2 were deleted. Values for the second-, and fourth-order moments of y_1, y_2, x_1, and x_2 were estimated, and the asymptotic distribution-free method of weighted least squares was applied to those values in order to obtain an estimate for (9.28). The estimate that was obtained will be an estimate derived from consistent estimates of θ in (9.56) and of the asymptotic variances of the estimates of θ under one condition. That condition is that the estimate of (9.28) was based on values for the fourth-order moments of y_1, y_2, x_1, and x_2 that were consistent estimates of the corresponding values in the population.

Results

The estimates obtained for (9.28) appear in table 9-8, together with the probabilities of the estimates in a standard normal distribution. Based on these figures, $\sim H_{11}$ was rejected and H_{11} accepted for $\theta = \gamma_{11}$, γ_{11}, and γ_{11}: $\sim H_{11}$ was rejected and H_{11} accepted for $\theta = \gamma_{11}$. These decisions were justified under the assumption that the estimates of (9.28) were derived from consistent estimates of θ in (9.56) and of the asymptotic variances of the estimates of θ. The corroboration of H_{11} for $\theta = \gamma_{11}$ and $\theta = \gamma_{11}$ is consistent with the possibility that the power of the positions one attributes to oneself depends on whether one is female and on whether one is elderly. That H_{11} was corroborated for $\theta = \gamma_{11}$ but rejected for $\theta = \gamma_{11}$ implies that the status of the positions one attributes to oneself may depend on whether one is female, but not on whether one is elderly.

Findings Concerning Experience of Incivility and Position in Society

A moment structure model was devised to test whether experience of incivility and perceived position in society, together with ideas and feelings about criminal victimization, could explain women and elderly people being especially likely to feel unsafe out alone at night. The model that was devised is model (9.57-62):

Table 9-8. Estimates of (9.28) for Various Values of θ in (9.56), Possible Significance of θ, and Probabilities of Estimates of (9.28) in a Standard Normal Distribution, Adults in England and Wales in 1984 (N = 3,317), Weighted Least Squares Estimates from Second-Order Moments

θ	Possible Significance of θ	Estimate of (9.28)	Probability
γ_{11}	Change in the Expected Value of y_1 Associated with Unit Increments in the Expected Value of x_1	-49.136	1.998×10^{-11}
γ_{21}	Change in the Expected Value of y_1 Associated with Unit Increments in the Expected Value of x_1	18.075	1.998×10^{-11}

Table 9-8. *Continued.*

θ	Possible Significance of θ	Estimate of (9.28)	Probability
γ_{12}	Change in the Expected Value of y_1 Associated with Unit Increments in the Expected Value of x_2	−22.713	1.998×10^{-14}
γ_{22}	Change in the Expected Value of y_2 Associated with Unit Increments in the Expected Value of x_2	−1.301	.193

Model Specification

Model (9.57-62) is defined by the following set of equations

(9.57) $$y = \begin{bmatrix} \gamma_1 & \gamma_2 & \gamma_3 & \cdot & \cdot & \cdot & \gamma_{33} \end{bmatrix} \begin{bmatrix} x_1 \\ x_2 \\ x_3 \\ \cdot \\ \cdot \\ \cdot \\ x_{33} \end{bmatrix} + \zeta$$

(9.58) $$\begin{bmatrix} x_{15} \\ x_{16} \\ x_{17} \\ x_{18} \\ x_{19} \\ x_{20} \end{bmatrix} = \begin{bmatrix} x_6 \\ x_7 \\ x_8 \\ x_9 \\ x_{11} \\ x_{12} \end{bmatrix} \begin{bmatrix} x_{11} \end{bmatrix}$$

(9.59)
$$\begin{bmatrix} x_{21} \\ x_{22} \\ x_{23} \\ x_{24} \\ x_{25} \\ x_{26} \\ x_{27} \end{bmatrix} = \begin{bmatrix} x_6 \\ x_7 \\ x_8 \\ x_9 \\ x_{10} \\ x_{11} \\ x_{12} \end{bmatrix} \begin{bmatrix} x_{12} \end{bmatrix}$$

(9.60)
$$x_{31} = x_{28} \times x_{29} \times x_{30}$$

(9.61)
$$E(y) = E(x_i) = E(\zeta) = 0, \text{ for } i = 1, 2, 3, \ldots, 33$$

(9.62)
$$\gamma_{13} = 0 = \gamma_{14}$$

The greek letter γ with any subscript i in equations (9.57) and (9.62) represents a constant, for $i = 1, 2, 3, \ldots, 33$. The letter y denotes a variable ranging over how unsafe people feel while out alone in their neighbourhoods at night. The symbols x_1 through x_{11} are defined as they are for model (8.49–53). The symbol x_{11} stands for experience of incivility. Symbols x_{11} and x_{11} represent lack of faith in the will of the community to control incivility informally, and lack of faith in the official guardianship of civility in the community. The variables denoted by x_{11} and x_{11} cover variations in power and status. The greek letter ζ in equations (8.50) and (8.53) covers all of the variables that may influence y so that

$$E(x_i\zeta) = 0, \text{ for } i = 1, 2, 3, \ldots, 33.$$

Explication

Equation (9.62) of model (9.57–62) proposes that the phenomenon of women and elderly people feeling more unsafe while out alone at night than men and younger people feel can be fully explained as a linear function of the following factors: fears of crimes, perceived risks of criminal victimization, perceived vulnerability to crime, experience of incivility, lack of faith in the capacity of the community to control incivility, and perceived position in society. By including the terms x_{15} through x_{21}, the model takes into account that women and elderly people may have a greater aversion to criminal victimization than men and younger folks have. The inclusion of the term x_{31} is meant to cover the possibility that exposure to incivility is more detrimental to a person's sense of security when that person lacks confidence in the community's control over incivility.

The hypothesis that the model is not complete for the population of adults in England and Wales in 1984 is referred to as H_{11}. The alternative hypothesis is referred to as $\sim H_{11}$, and may be formulated as follows:

$$\operatorname*{plim}_{N \to \infty} F(\theta) = 0 \qquad (9.33)$$

for adults in England and Wales in 1984, where $F(\theta)$ is defined as for (6.1) Under H_{11}, the sampling distribution of the quantity (8.22) is chi-square with two degrees of freedom for large, simple random samples of the specified population. A maximum of .1 for probability for error in rejecting $-H_{11}$ was considered acceptable (cf. Hayduk 1987, 161).

Identification and Estimation

A model like (9.57-62) is always identified (cf. Bollen 1989, 96). So, the unknown terms of model (9.57-62) are estimable.

The same subgroup of respondents to the 1984 *British Crime Surveys* as were randomly selected for the estimation of (9.18) served as the basis for estimating model (9.57-62). The data for the respondents for whom no observations were recorded in BCS84.RAW on the variables y, x_1 through x_{11}, x_{11} through x_{11}, and x_{11} and x_{11} were not taken into account. The data that were taken into account were weighted according to (8.52).

The variables y and x_1 through x_{11} were measured as they were for the estimation of model (8.49-53). Variable x_{11} was measured according to the formula (9.22). To determine values on x_{11} and x_{11}, normal scores were assigned to the survey participants' answers to the questions they were asked about whether their neighbours helped one another, and about whether their local police were doing a good job. Variables x_{11} and x_{11} were measured according to (9.44) and (9.45).

Values for the second-order moments of y and x_1 through x_1 were estimated. The method of generalized least squares was applied to those values in order to obtain estimates of (8.55) and (8.56) for model (9.57-62).

Results

The number of cases that were used in estimating (9.57-62) was 2,496: 75 percent of those that were randomly selected from among the respondents to the 1984 *British Crime Surveys*. The estimate that was obtained for (8.56) was 0.015. The probability of the absolute value of that estimate in the sampling distribution of a standard normal variate is .988 (SYSTAT for Windows Version 5, distribution functions). For (8.55), the value of the estimate that was obtained was 67.43. That value has a probability of 2.331×10^{-15} in the sampling distribution of chi-square with two degrees of freedom (SYSTAT for Windows Version 5, distribution functions). With that figure in mind, $\sim H_{11}$ was rejected and H_{11} accepted under the assumption that the estimate of (8.55) was a consistent estimate of $F(\theta)$ in (9.63). This decision implies that women and elderly people's feelings of not being safe while out alone at night cannot be fully explained as linear function of their perceived positions in society and their feelings and ideas about criminal victimization and incivility.

Findings Concerning the Intention to Avoid Being Criminally Victimized

Moment structure model (9.64-69) was written to describe how intent to avoid criminal victimization may be measured. Another model, model (9.64-72) was devised in order to test the notion that when people say they feel unsafe while out alone in their neighbourhoods at night, they are expressing their intentions to try to avoid being criminally victimized.

Measuring Intent to Avoid Being Criminally Victimized

Model Specification

Let ξ_1 be a person's intention to take precautions against becoming a victim of crime. Let x_1, x_1, and x_1 be people's statements of how often, simply as a precaution against crime when they go out after dark, they avoid certain types of people, avoid certain places, and have someone else accompany them. Then model (9.64-69) is defined by the equations,

(9.64) $$x_1 = \lambda_{11}\xi_1 + \delta_1,$$

(9.65) $$x_2 = \lambda_{21}\xi_1 + \delta_2,$$

(9.66) $$x_3 = \lambda_{31}\xi_1 + \delta_3,$$

(9.67) $$E(x_i) = E(\xi_1) = E(\delta_i) = 0, \text{ where } i = 1, 2, 3,$$

(9.68) $$E(\xi_1\xi_1) = 1,$$

and,

(9.69) $$E(\delta_i\delta_j) = 0, \text{ where } i, j = 1, 2, 3, \text{ and } i \neq j,$$

where λ_{i1} is a constant for $i = 1, 2, 3$, and δ_i represents any number of variables affecting x_i so that

$$E(\xi_1\delta_i) = 0, \text{ for } i = 1, 2, 3.$$

Explication

Model (9.64–69) proposes that x_1, x_1, and x_1 all indicate the same state of mind. That state of mind is specified to be the intention to take precautions against criminal victimization. The value of the quantity (9.21) for x_1 though x_3 may be interpreted as the reliability of using x_1 x_2, and x_3 together as measures of ξ_1 (cf. McDonald 1985, 217).

Identification and Estimation

Model (9.64-69) is identified under Bollen's "three-indicator rule" (Bollen 1989, 244). It was estimated for the population of adults in England and Wales using data from the 1984 *British Crime Surveys* that are in the file BCS84.RAW. Those data pertained to the same 3,341 respondents as those who were randomly selected for the purpose of estimating the quantity (9.18).

The respondents' answers to the questions they were asked concerning precautions they might have taken against crime when they went out after dark were used to assign values on the variables x_1 x_2, and x_3. These variables were assumed to be standard normal variates underlying the respondents' answers, and the answers were assumed to correspond to threshold values of the underlying variables. (Muthén 1983, 44-46). Under these assumptions, values on x_1 though x_3 corresponding to the respondents' answers could be estimated by assigning normal scores to the respondents based on their answers, and taking those normal scores as values on x_1 x_2, and x_3 (cf. Bollen 1989, 439-4; Jöreskog and Sörbom 1988, pp. 1-4 - 1-5; Muthén 1983, 44-46).

For some of the respondents, there were no records of answers to the questions about precautions taken when going out after dark. Those respondents were excluded from the estimation procedure. Two hundred and ninety-six of them, or 9 percent of the original 3,341, were respondents who said that they never went out after dark for leisure. They were never asked to say whether they took the precautions, when going out after dark, of avoiding certain types of people and certain places, and of having someone else accompany them. Not taking these respondents into account in the estimation of models (9.64-69) means that the results may not apply to those persons in the population who do not ever go out for leisure after dark.

Estimates were obtained for the second-, and fourth-order moments of the x_1 through x_1. The weighted least squares method was applied to those estimates in order to estimate the unknown terms of model (9.63-68). The estimates for the unknown terms of model (9.63-68) obtained in this way will be consistent provided model (9.63-68) is correct, and provided the estimates obtained for the second-order moments of x_1 x_1, and x_1 were consistent.

Results

The estimates of the unknowns of (9.64-69) appear in table 9-9. From these figures, one can determine that the value of (9.21) for the model is .823.

Table 9-9. Estimates and Possible Significance of Terms λ_{ji} and $E(\delta_i \delta_j)$ of Model (9.64-69), English and Welsh Adults in 1984 (N = 2,796), Weighted Least Squares Estimates from Second-Order Moments Based on Normal Scores, List-wise Deletion

Term	Possible Significance	Estimate
λ_{11}	Change in the Expected Value of y_1 Associated with Unit Increments in the Expected Value of x_1	0.729
λ_{21}	Change in the Expected Value of y_2 Associated with Unit Increments in the Expected Value of x_1	0.793
λ_{31}	Change in the Expected Value of y_3 Associated with Unit Increments in the Expected Value of x_1	0.600

Table 9-9. *Continued.*

Term	Possible Significance	Estimate
$E(\delta_1\delta_1)$	Variance of the Random Error in the Measurement of ξ_1 Using x_1	0.328
$E(\delta_1\delta_1)$	Variance of the Random Error in the Measurement of ξ_1 Using x_1	0.203
$E(\delta_1\delta_1)$	Variance of the Random Error in the Measurement of ξ_1 Using x_1	0.439

Saying That One Feels Unsafe As an Expression of the Intention To Avoid Criminal Victimization

Model Specification

Model (9.64-72) is the model that was devised to test the notion that when people say they feel unsafe while out alone in their neighbourhoods at night, they are expressing their intentions to try to avoid being criminally victimized. The model is defined by adding the following specifications to model (9.64–69).

(9.70) $$x_4 = \lambda_{41}\xi_1 + \delta_4$$

(9.71) $$E(\delta_4) = 0$$

(9.72) $$E(\delta_4\delta_i) = 0, \text{ where } i = 1, 2, 3$$

The term x_4 of (9.70) represents a person's statement of how unsafe he or she feels while out alone in his or her neighbourhood after dark. The term λ_{41} is a constant, while the term δ_4 of (9.70) through (9.72) represents all of the variables that affect x_4 in such a way that

$$E(\xi_1\delta_4) = 0.$$

Explication

Model (9.64–72) expresses the notion that saying one *feels insecure while out alone at night* conveys the same state of mind that x_1, x_2, and x_3

of (9.64-69) all convey. The economy of model (9.64-72) may be compared with that of model (9.57-62) for a given population by comparing the ratios of (8.22) to their degrees of freedom for the two models. The model with the smaller ratio will be more economical one (cf. Jöreskog 1969, 201).

Identification and Estimation

Model (9.64-72) was estimated for the population of adults in England and Wales in 1984. The estimation was done by applying the asymptotic distribution-free method of weighted least squares to estimates of the second-, and fourth-order moments of variables x_1 through x_1. Those estimates were based on data in BCS84.RAW pertaining to the same 3,341 respondents to the 1984 *British Crime Survey* as those who were randomly selected for the purpose of estimating (9.18). To estimate the second-, and fourth-order moments of x_1 through x_1, the variables x_1, x_1, and x_1 were measured in the same way as they were for model (9.64-69); and the variable x_1 was measured by assigning normal scores to the respondents' statements of how safe they felt while out alone at night. Cases missing data on x_1, x_1, x_1, or x_1 were eliminated from the analysis.

Results

The number of cases that were available for the estimation of (8.22) for model (9.64-72) was 2,795, or 84 percent of the original 3,341. The weighted least square estimate of (8.22) for (9.64–72) was 80.81 with two degrees of freedom. So, the ratio of the quantity (8.22) to its degrees of freedom is larger for model (9.64–72) than it is for model (9.57–62).

Discussion

The results from estimating (9.18) showed that the perception of the frequency of interpersonal incivilities need not be considered distinct from the perception of the frequency of physical incivilities. This finding justifies combining measures of exposure to interpersonal incivilities and measures of exposure to physical incivilities in a scale for measuring perceptions of the frequency of incivility, as in (9.22). The value of .782 for the quantity (9.21) for the scale defined by (9.22) may be taken as indicating that the scale for measuring perceptions of the frequency of incivility has a respectable level of reliability (DeVillis 1991, 85).

The scale is used in model (9.23–24) to see whether exposure to incivility and doubts about the community's capacity for controlling incivility are associated with feeling unsafe while out alone at night. The results from estimating the model support the possibility that exposure to incivility and lack of faith in the prospect of the community controlling incivility through informal measures are associated with feeling unsafe. Yet, the possibility that exposure to incivility and doubts about the community's control over incivility are associated with feeling unsafe does not help to explain the phenomenon of women and elderly people being especially likely to feel unsafe. If the measure of exposure to incivility used in estimating equations (9.29) through (9.38) can be trusted, then the results of estimating model (9.29–30) indicate that women and elderly people are not more exposed to incivility than men and younger people are. Those results also indicate that women and elderly people are not more likely to lose faith in their communities' capacities for enforcing civility.

The results of estimating model (9.46–47) are consistent with the possibility that the power and the status of the identities that people see themselves as having are associated with how insecure they feel out alone at night. That the estimates of the quantity (9.28) for model (9.46–47) were positive for both $6 = \gamma_1$ and $\theta = \gamma_2$ of equation (9.46) implies that more power and more status are associated with greater insecurity. How having more power and status could go along with greater insecurity may be understood by considering how the constant term γ of (9.5), which corresponds to both γ_1 and γ_2 of model (9.46–47), could have a positive value. According to (9.4), γ would be positive in (9.5) if people believe that the probability of occupying a higher social position conditional upon having been harmed is directly proportional to the probability of being harmed conditional upon occupying a higher position. That state of affairs would explain how enjoying more power and more status could be associated with a greater sense of insecurity. Whether such an explanation corresponds with the facts will not be apparent until the terms $p(D|H)$ and $p(H|D)$ of (9.4) can be measured directly, however.

The results of estimating model (9.49–53) provide information about the forms of the associations between power and status and feelings of insecurity. Given the directions of the effects of variations in power and status on the probabilities of experiencing various levels of insecurity, it is possible that the associations between power and status and feelings of insecurity are monotonic. There are variations in the magnitudes of the effects of variations in power and status across levels of insecurity. Those variations may be due to nonlinearities in the associations between the power and status of the positions people attribute to themselves and how insecure they feel while out alone at night. Yet, since the Pearson correlation coefficients for the associations are almost equal to the square-roots of the unbiased correlation ratios, any nonlinearities in the associations between power and status and feelings of insecurity can hardly be serious. If so, then the associations of power and status with feelings of insecurity may be adequately represented as linear associations, as they are in models (9.46-47) and (9.57-62).

From the estimates obtained for model (9.54-55), one may conclude that the power of the identities women and elderly people attribute to themselves may vary from the power of the identities men and younger people see themselves as having. The estimates obtained for the quantity (9.28) for $\theta = \gamma_{11}$ and $\theta = \gamma_{11}$ in (9.56) suggest that women and elderly people tend to see themselves as having identities of less power than the identities that men and younger people claim for themselves. Since it has already been established that more power is associated with greater insecurity, the possibility that women and elderly people see themselves as having identities with less power would not explain why they are especially likely to feel insecure.

The estimates for model (9.54-55) also show that the identities women claim for themselves tend to differ in status from the identities that men claim. Since the estimate of the quantity (9.28) for $\theta = \gamma_{11}$ in (9.56) is positive in value, it seems that the identities women attribute to themselves tend to be of higher status than the identities that men see themselves as having. That state of affairs may partially explain women being especially likely to feel insecure while out alone at night, for it has already been determined that more status goes along with a greater sense of insecurity. The fact that elderly people are more likely to say that they feel unsafe than younger folks are cannot be explained by their claiming identities that differ in status from the identities that younger people claim. The estimates for model (9.54-55) show that the identities that the elderly attribute to themselves tend to be equal in status to the identities that younger folks see themselves as having.

From the estimates for model (9.57-62), it appears that the phenomenon of women and elderly people being especially likely to feel unsafe is not fully explained by their positions in society and their attitudes to criminal victimization and incivility. In the previous chapter, it was demonstrated that errors in measurement could be the reason that attitudes to criminal victimization do not seem sufficient explanations for women and elderly people feeling unsafe. Errors in measurement may also be why taking into account positions in society and attitudes to incivility still does not provide for a complete understanding of the phenomenon.

The value of (9.21) for model (9.64-69) indicates that a very good level of reliability in the measurement of the intention to evade criminal victimization is attained by considering the avoidance of certain types of people, the avoidance of certain places, and the avoidance of going out unaccompanied (cf. DeVillis 1991, 85). Yet, the comparison of the ratios of (8.22) for models (9.57-62) and (9.64-72) to their associated degrees of freedom indicates that women and elderly people's statements of not feeling safe while out alone at night are better represented as effects of their social positions and of their thoughts and feelings about criminal victimization and incivility than they are as expressions of intentions to avoid criminal victimization.

CHAPTER 10

REFLECTION

This dissertation tackles the problem of corroborating a scientific explanation for women and elderly people being more likely to feel unsafe while out alone in their neighbourhoods at night than men and younger people. The present chapter concerns the scope of the dissertation's humble contribution to the solution of that problem.

Explanations Put Forward

Much of the dissertation's contribution is in the development of explanations for women and elderly people being more likely to feel unsafe while out alone in their neighbourhoods at night than men and younger people. One of those explanations is developed on the basis of the three causes that scholars have postulated for people feeling unsafe while out alone in their neighbourhoods at night: fear of crime, perceived risk of criminal victimization, and perceived vulnerability to crime. According to the explanation, women and elderly people are especially likely to feel unsafe because women and elderly people are more likely to be afraid of crime, perceive risks of criminal victimization, and perceive themselves as vulnerable to crime. Other explanations were developed on the basis of arguments scholars that have put forward to account for fear of crime. By those explanations, women and elderly people are especially likely to feel unsafe, either due to their intending to avoid criminal victimization, or due to their social positions and their thoughts and feelings about criminal victimization and incivility.

Findings Reported

The explanations developed in the dissertation were tested, and the results of the tests are reported. None of the explanations cover the facts. That is the most important finding of the dissertation.

Other findings supplement earlier research on the variables that may be associated with being old, being a woman, and feeling unsafe while out alone at night. The earlier research established that fears and perceived risks of the crimes of assault, burglary, car theft, fraud, murder, rape, robbery, and vandalism are associated with feeling unsafe. It was also established that women tend to have more fear of those crimes than men, but that women do not tend to perceive greater risks of being victims of all of the crimes. Elderly people were not found to be more afraid of any of the crimes than younger people were, and were also not found to perceive greater risks of being subjected to any of the crimes than younger people were. The results reported in the dissertation show that there is no type of crime of which elderly people are known to be especially afraid, or to which elderly people perceive especially great risks of being subjected. Further, it appears that exposure to incivility, lack of faith in the community's control over incivility, and claiming identities of lower power and status are not positively associated with being a woman, being elderly, and feelings of insecurity. Perceptions of being vulnerable to crime do appear to be positively associated with feeling unsafe, being a woman and being elderly, however. What is interesting about all these findings is that for a variable to even partially explain the tendency of women and elderly people to feel unsafe, it must be positively associated with feeling unsafe, being a woman, and being elderly. Thus, fears of crimes, perceptions of being vulnerable to crime may at least partially explain the tendency of both women and elderly people to feel unsafe. Perceived risks of criminal victimization, exposure to incivility, lack of faith in the community's control over incivility, and claiming identities of lower power and status may not even partially explain both women and elderly people being especially likely to feel unsafe.

Limitations of the Findings

One limitation of the findings of the dissertation is that they are based on data in which the variability of the variables postulated to be associated with feeling insecure while out alone at night is restricted. Another limitation is that the findings cover only a few of the variables that could plausibly explain the tendency of women and elderly people to feel unsafe while out alone in their neighbourhoods at night.

Artificial Restrictions on the Variability of the Variables Postulated to be Associated with Feeling Insecure While Out Alone at Night

The findings reported in the dissertation that show variables not to be associated with one another are based on statistical tests of the soundness of moment structure models asserting the variables to be associated. The outcomes of such tests depend on the variability of the exogenous variables of the models in question (cf. Lewis-Beck 1980, 37). In particular, if the variability of an exogenous variable is artificially restricted, then the results of a test may not corroborate the assertion that the endogenous variables are associated with that exogenous variable, even if the assertion is correct. This property of statistical tests of the soundness of moment structure models undermines the validity of any findings reported in the dissertation showing variables not to be associated with one another. The validity of those findings is undermined because they are based on data in which the variability of the exogenous variables that are supposed to be associated with feeling unsafe while out alone at night is artificially restricted.

One reason that the variability of the exogenous variables may be artificially restricted is that the data are records of the distribution of individuals over a set of categories superimposed upon presumably continuous variables. Data of this kind will obscure any fractional differences among individuals assigned to the same superimposed categories and, thereby, artificially restrict the variability of the underlying, presumably continuous variables (cf. Bohrnstedt and Knoke 1988, 15).

Another reason that the variability of the exogenous variables supposedly associated with feeling unsafe while out alone at night may be artificially restricted is that the data pertain to people who may be similar in terms of those variables. The people in question are adults in England and Wales in 1984. They may be relatively similar in terms of the variables supposedly associated with feeling unsafe while out alone at night because they are exposed to mass media, and because they are adults.

Leslie T. Wilkins does not deny that people who are exposed to mass media will likely be aware of more potential dangers than people who have no such exposure (Wilkins 1964, 59-65). Yet, he maintains that mass media audiences will have less information about most of the dangers of which they are aware, for, in most cases, their awareness will not come from the richest source of information: direct experience (Wilkins 1964, 64). Having less information about the dangers of which they are aware, people exposed to mass media may feel less able to cope with the things they know could harm them than people who are not exposed to mass media (Wilkins 1964, 63-64). Thus, there may be a greater tendency among individuals in mass media audiences to believe that they are subject to any given threat than there may be among individuals who are not members of such an audience. That is why people who are exposed to mass media may be relatively similar in terms of the variables supposedly associated with feeling unsafe while out alone at night.

Adults may be more similar in terms of the variables supposedly associated with feeling unsafe while out alone at night than children are. If people's awareness of, and responses to potential dangers are learned in childhood, then children may be expected to be more dissimilar than adults in their awareness of, and responses to potential dangers. Children may be expected to be more dissimilar than adults because not all children will have completed the process of learning about danger, but nearly all adults will have done so.

Failure to Consider Many of the Variables That Could Plausibly Explain the Tendency of Women and Elderly People To Feel Unsafe While Out Alone in Their Neighbourhoods at Night

The findings reported in the dissertation cover position in society, and responses to crime and incivility. Yet, position in society and responses to crime and incivility are not the only variables that could plausibly explain the tendency of women and elderly people to feel unsafe while out alone in their neighbourhoods at night. There are many variables that are known to be associated with being old and with being a woman, and some or all of these could credibly be associated with feeling unsafe while out alone after dark. The findings of the dissertation are limited in that they do not cover every one of those variables.

Variables Associated with Being Old

Russell A. Ward has compiled a quite extensive list of the characteristics of the elderly people living in a Western industrialized country in the latter twentieth century (Ward 1984, 221-52). His list is as follows:

1. Shorter remaining life expectancy than younger adults
2. Higher probability of being female
3. Residential segregation
4. Diminished ability to maintain homeostasis
5. Higher probability of suffering from some chronic illness
6. Higher probability of being disabled
7. Sensory impairment
8. Deteriorated mental ability
9. Higher probability of suffering from psychological disorders
10. Lower expected level of education
11. Poorer quality of housing
12. Reduced labour force participation
13. Lower income

The diminished ability to maintain homeostasis of elderly people as compared with younger people is just one characteristic of the elderly that may be associated with feeling unsafe while out alone after dark. Diminished ability to maintain homeostasis may cause an aversion to stressful situations that is manifest in feelings of insecurity while out alone at night. That hypothetical state of affairs is not covered by this dissertation's findings and yet might explain the tendency of elderly people to say that they would feel unsafe if they were out by themselves in their neighbourhoods after dark. In the sample for the 1984 *British Crime Surveys*, 1,318, or 36 percent of those who felt unsafe walking alone in the vicinity of their homes at night said that they felt unsafe because of a general fear that something might happen. That they said they felt unsafe because of a general fear that something might happen may imply that their feelings of insecurity were due to concern about any stressful situations that might have arisen. Yet, to obtain proper evidence that feelings of not being safe while out alone at night manifest concern about stressful situations, it would be necessary to develop an accurate measure of that concern. Then it would be necessary to ascertain whether confirmations of feelings of not being safe while out alone at night could substitute for such a measure. Of course, it is possible that feelings of not being safe while out alone at night manifest concern about certain types of stressful situations about which elderly people are especially concerned.

Variables Associated with Being a Woman

Juliet Mitchell identifies four characteristics of women (Mitchell 1971: 101-120). The four characteristics are these:

1. Distinct roles in the productive activities of societies
2. A distinct role in reproduction

3. Distinct sexual desires, and distinct ways of expressing those desires
4. Distinct responsibilities in the socializing of children

The distinct role that women have in reproduction is one characteristic of theirs that is not covered by this dissertation's findings but which may be associated with feeling unsafe while out alone at night. Women's role in reproduction "includes a 9-month gestation period, lactation, and much subsequent nurture" (Daly and Wilson 1988, 139). As a result, the investment each parent makes in each child at the expense of investing in other children is typically greater for women than it is for men (Daly and Wilson 1988, 139; Trivers 1972, 139). Sexual access to a person with the resources to cover the investment that he or she would be required to make as a parent is consequently a greater prize for a man than it is for a woman (cf. Daly and Wilson 1988, 139-40; Wilson and Daly 1985, 60). So, the intensity of competition for access to others for the purpose of sexual reproduction is generally more intense among men than it is among women (Wilson and Daly 1985, 60). The more intense a competition is, the more likely the participants are to resort to risky competitive tactics (Wilson and Daly 1985, 60). "As a general consequence, the entire life history strategy of males is a higher-risk . . . adventure than that of females" (Alexander 1979, 241); "men . . . are relatively 'risk-prone' and women relatively 'risk-averse'" (Daly and Wilson 1983, 299). Women may be expressing their relative aversion to taking risks when they say that they do not feel safe while out alone in their neighbourhoods at night. That possible state of affairs might explain their being especially likely to say that they do not feel safe in that situation. To establish that statements of not feeling safe while out alone at night express an aversion to taking risks, it would be necessary to show that such statements could substitute for an accurate measure of that aversion. Saying that one does not feel safe while out alone at night may manifest an aversion to taking certain types of risks, though, that women may be especially averse to taking.

The Value of the Findings

This findings of this dissertation are based on imperfect data and also disregard certain variables that could plausibly explain the phenomenon of women and elderly people being especially likely to feel unsafe while out alone at night. Yet, the findings have value in so far as they cast doubt on certain explanations for the phenomenon that are interesting because of what scholars have written concerning it heretofore. Scholars have written that people are especially likely to feel unsafe while out alone at night if they fear crime and perceive risks of criminal victimization, or if they perceive themselves to be vulnerable to crime. In addition, scholars have developed explanations for variations in fear of crime. This dissertation reports findings bearing on the idea that women and elderly people are especially likely to feel unsafe out alone at night because of their fear of crime, perceived risks of criminal victimization, and perceived vulnerability to crime. The dissertation also extends the explanations scholars developed for variations in fear of crime to cover the phenomenon of women and elderly people being especially likely to feel unsafe while out alone at night. The reported findings fail to corroborate any of the explanations for the phenomenon that are considered. So, it may be concluded that what scholars have written concerning women and elderly people being especially likely to feel unsafe while out alone at night does not provide the means of explaining the phenomenon. Perhaps this is not an entirely uninteresting conclusion with which to end the dissertation.

WORKS CITED

A dictionary of philosophy, 1984 ed. S.v. "Bayes's theorem."

Alexander, Richard D. 1979. *Darwinism and human affairs*. Seattle, WA: University of Washington Press.

Antunes, George E., and Patricia A. Hurley. 1977. The representation of criminal events in Houston's two newspapers. *Journalism Quarterly* 54: 756-60.

Asher, Herbert B. 1983. *Causal modeling*. Beverly Hills, CA: Sage Publications.

Babbie, Earl. 1983. *The practice of social research*. Belmot, CA: Wadsworth Publishing Co., Wadsworth.

Bannon, Erin Ashley. 1988. The influence of cognitive and affective assessments of risk upon victimization prevention behaviors. Ph.D. diss. The Ohio State University.

Baumer, Terry L. 1979. The dimensions of fear of crime. Unpublished paper. Center for Urban Affairs, Northwestern University.

________, and Dennis P. Rosenbaum. 1982. Fear of crime: An empirical clarification of methodological issues. Paper presented at the annual meeting of the American Psychological Association, Washington, DC, 23-27 August.

Bentler, P. M. 1983. Simultaneous equation systems as moment structure models with an introduction to latent variable models. *Journal of Econometrics* 22: 13-42.

________, and Chih-Ping Chou. 1987. Practical issues in measurement modeling. *Sociological Methods and Research* 16: 78-117.

Bergmann, Merrie, James Moor, and Jack Nelson. 1990. *The logic book*. New York, NY: McGraw-Hill Publishing Co.

Berry, William D., and Stanley Feldman. 1985. *Multiple regression in practice*. Beverly Hills, CA: Sage Publications.

Blalock, Hubert M. 1972. *Social statistics*. New York, NY: McGraw-Hill Book Co.

Block, Richard. 1984. The impact of victimization, rates and patterns: A comparison of the Netherlands and the United States. *See* U.S Department of Justice, Bureau of Justice Statistics. 1984.

Bohrnstedt, George W., and David Knoke. 1988. *Statistics for social data analysis*. Itasca, IL: F. E. Peacock Publishers.

Bollen, Kenneth A. 1989. *Structural equations with latent variables*. New York, NY: John Wiley & Sons.

Box, Steven, Chris Hale, and Glen Andrews. 1988. Explaining fear of crime. *British Journal of Criminology* 28: 340-56.

Boyle, Richard P. 1975. Path analysis and ordinal data. *American Journal of Sociology* 75: 461-480.

Brillon, Yves. 1987. *Victimization and fear of crime among the elderly*. Translated by D. R. Crelinston. Toronto, ON: Butterworths.

Brodt, Stephen J. 1987. "Rape panic": Definition of a crime problem and community response. *Free Inquiry in Creative Sociology 15: 183-87.*

Browne, Michael W. 1982. Covariance structures. In *Topics in Applied Multivariate Analysis*, ed. Douglas M. Hawkins, 72-141. Cambridge, U.K.: Cambridge University Press.

Bullock, Alan, and Oliver Stallybrass, eds. 1977. *The Fontana dictionary of modern thought*. London, U.K: Fontana/Collins. S.v. "Cognitive Psychology," by Jerome Bruner.

Byrne, Barbara M. 1989. *A primer of LISREL: Basic applications and programming for confirmatory factor analytic models, with 25 illustrations and 60 tables*. New York, NY: Springer-Verlag.

Clemente, Frank, and Michael B. Kleinman. 1977. Fear of crime in the United States: A multivariate analysis. *Social Forces* 56: 519-531.

Converse, Jean M., and Stanley Presser. 1986. *Survey questions: Handcrafting the standard questionnaire*. Beverly Hills, CA: Sage Publications.

Covington, Jeanette, and Ralph B. Taylor. 1991. Fear of crime in urban neighborhoods: Implications of between- and within-neighborhood sources for current models. *The Sociological Quarterly* 32: 231-49.

Cuttance, Peter. 1987. Issues and problems in the application of structural equation models. In *Structural equation modeling by example: Applications in educational, sociological, and behavioral research*, ed. Peter Cuttance and Russell Ecob, 241-79. Cambridge, U.K.: Cambridge University Press.

Dalton, Russell L. 1981. Reassessing parental socialization: Indicator unreliability versus generational transfer. *Amercan Political Science Review* 74: 421-31.

Daly, Martin and Margo Wilson. 1983. *Sex, evolution, and behavior.* Belmont, CA: Wadsworth Publishing Co., Wadsworth.

________. 1988. *Homicide.* New York, NY: Aldine de Gruyter.

________. 1990. Killing the competition: Female/female and male/male homicide. *Human Nature* 1: 81-107

Davis, F. James. 1951 Crime news in Colorado newspapers. *American Journal of Sociology* 57: 325-30.

DeVellis, Robert F. 1991. *Scale development: Theory and applications.* Newbury Park, CA: Sage Publications.

Doob, Anthony N., and Glenn E. MacDonald. 1979. Television viewing and fear of victimization: Is the relationship causal? *Journal of Personality and Social Psychology* 2: 170-79.

DOS-LISREL Version 7.20. Scientific Software, Chicago, IL.

DOS-PRELIS Version 1.20. Scientific Software, Chicago, IL.

DuBow, Fred, Edward McCabe, and Gail Kaplan. 1979. *See* U.S. Department of Justice, Law Enforcement Assistance Administration, National Institute of Law Enforcement and Criminal Justice.

Ennis, Philip H. 1967. *See* The President's Commission on Law Enforcement and Criminal Justice. 1967.

Evans, John L., and Gerald J. Leger. 1979. Canadian victimization surveys: A discussion paper. *Canadian Journal of Criminology* 21: 166-83.

Ferraro, Kenneth F., and Randy L. LaGrange. 1987. The measurement of fear of crime. *Social Inquiry* 57: 70-101.

________. 1988. Are older people afraid of crime? *Journal of Aging Studies* 2: 277-87.

________. 1992. Are older people most afraid of crime? Reconsidering age differences in fear of victimization. *Journal of Gerontology* 47: S233-44.

________, and Michael Supancic. 1992. Perceived risk and fear of crime: Role of social and physical incivilities. *Journal of Research in Crime and Delinquency* 29: 313-34.

Fishbein, Martin, and Icek Ajzen. 1975. *Belief, attitude, intention, and behavior: An introduction to theory and research.* Reading, MA: Addison-Wesley Publishing Co.

Fishman. Mark. Crime waves as ideology. *Social Problems* 29: 531-43.

Fiske, Susan T., and Shelley E. Taylor. 1986. *Social cognition.* New York, NY: Random House.

Garofalo, James. 1979. Victimization and the fear of crime. *Journal of Research in Crime and Delinquency* 16: 80-97.

________. 1987. Reassessing the lifestyle model of criminal victimization. In *Positive criminology*, ed. Michael R. Gottfredson and Travis Hirschi, 23-42. Beverly Hills, CA: Sage Publications.

________, James, and John Laub. 1978. The fear of crime: Broadening our perspective. *Victimology: An International Journal.* 3: 242-53.

Gates, Lauren B., and William M. Rohe. 1987. Fear and reactions to crime: A revised model. *Urban Affairs Quarterly* 22: 425-53.

Gerbner, George, and Larry Gross. 1976. Living with television: The violence profile. *Journal of Communication* 26: 173-99.

Gerth, Hans, and C. Wright Mills. 1964. *Character and social structure: The psychology of social institutions.* New York, NY: Harcourt, Brace & World.

Goffman, Erving. *The presentation of self in everyday life.* Garden City, NY: Doubleday Anchor Books, Doubleday & Co.

Gottfredson, Michael R. 1984. *See* U.K. Home Office Research and Planning Unit. 1984.

Gorsuch, Richard L. 1983. *Factor analysis.* Hillsdale, NJ: Lawrence Erlbaum Associates, Publishers.

Greenberg, Stephanie. 1983a. *Characteristics of high and low crime neighborhoods in Atlanta, 1980.* Data file documentation. ICPSR, 7951.

________, Stephanie. 1983b. *Characteristics of high and low crime neighborhoods in Atlanta, 1980.* Ann Arbor, MI: Inter-university Consortium for Political and Social Research. Machine-readable data file. ICPSR, 7951.

Grossman, Stanley I. 1986. *Applied mathematical analysis.* Belmont, CA: Wadsworth Publishing Co., Wadsworth.

Hagan, John, John Simpson, and A. R. Gillis. 1987. Class in the household: A power-control theory of gender and delinquency. *American Journal of Sociology* 92: 788-816.

________. 1988. Feminist scholarship, relational and instrumental control, and a power-control theory of gender and delinquency. *The British Journal of Sociology* 39: 301-36.

Harmon, Harry H. 1976. *Modern factor analysis.* Chicago, IL: University of Chicago Press.

Hartwig, Frederick, and Brian E. Dearing. 1979. *Exploratory data analysis.* Beverly Hills, CA: Sage Publications.

Hayduk, Leslie A. 1987. *Structural equation modeling with LISREL: Essentials and advances.* Baltimore, MD: Johns Hopkins University Press.

Heath, Linda. 1984. Impact of newspaper crime reports on fear of crime: Methodological investigation. *Journal of Personality and Social Psychology* 47: 263-76.

Heise, David R. 1979. *Understanding events: Affect and the construction of social action.* Cambridge, U.K.: Cambridge University Press.

Herting, Jerald R., and Herbert L. Costner. 1985. Respecification in multiple indicator models. In *Causal models in the social sciences*, ed. H. M. Blalock, Jr., 321-394. New York, NY: Aldine Publishing Co.

Hindelang, Michael J. 1976. *Criminal victimization in eight American cities: A descriptive analysis of common theft and assault.* Cambridge, MA: Ballinger Publishing Co., J. B. Lippincott Co.

Hindelang, Michael J., Michael R. Gottfredson, and James Garofalo. 1978. *Victims of personal crime: An empirical foundation for a theory of personal victimization.* Cambridge, MA: Ballinger Publishing Co, J. B. Lippincott Co.

Hough, Mike, and Pat Mayhew. 1985. *See* U.K. Home Office Research and Planning Unit. 1985.

Hubbard, Jeffrey C., Melvin L. DeFleur, and Lois B. DeFleur. 1975. Mass media influences on public conceptions of social problems. *Social Problems* 23, 22-35.

Hume, David. 1888. *A treatise of human nature.* London, U.K.: Oxford University Press.

Hunter, Albert. 1981. Symbols of incivility: Social disorder and fear of crime in urban neighborhoods. Paper presented at the 1978 meeting of the American Society of Criminology, Dallas, TX, 8-12 November.

Jaehnig, Walter B., David H. Weaver, and Frederick Fico. 1981. Reporting crime and fearing crime in three communities. *Journal of Communication* 31: 88-96.

Jeffords, Charles R. 1983. The situational relationship between age and the fear of crime. *International Journal of Aging and Human Development* 17: 103-111.

Jöreskog, Karl G. 1969. A general approach to maximum likelihood factor analysis. *Psychometrika* 34: 183-202.

________. 1973. A general method for estimating a structural equation system. In *Structural equation models in the social sciences*, ed. Arthur S. Goldberger and Otis Dudley Duncan, 85-112. New York, NY: Seminar Press, Harcourt Brace Jovanich, Publishers.

________. 1981. Analysis of covariance structures. *Scandinavian Journal of Statistics* 8: 65-92.

________, and Arthur S. Goldberger. 1972. Factor analysis by generalized least squares. *Psychometrika* 37: 243-260.

________, and Dag Sörbom. 1988. *PRELIS: A program for multivariate data screening and data summarization. A preprocessor for LISREL.* Mooresville, IN: Scientific Software.

________, and Dag Sörbom. 1989. *LISREL 7 user's reference guide.* Mooresville, IN: Scientific Software.

Kalton, Graham. 1983. *Introduction to survey sampling.* Beverly Hills, CA: Sage Publications.

Kemper, Theodore D. 1978. *A social interactional theory of emotions.* New York, NY: John Wiley & Sons.

________, and Randall Collins. 1990. Dimensions of microinteraction. *American Journal of Sociology* 96: 32-68.

Kendall, Maurice G., and Alan Stuart. 1973. *The advanced theory of statistics.* Volume 2, *Inference and relationship.* New York, NY: Hafner Publishing Co.

Kim, Jae-On, and Charles W. Mueller. 1978a. *Introduction to factor analysis: What it is and how to do it.* Beverly Hills, CA: Sage Publications.

________. 1978b. *Factor analysis: Statistical methods and practical issues.* Newbury Park, CA: Sage Publications.

LaGrange, Randy L., and Kenneth F. Ferraro. 1989. Assessing age and gender differences in perceived risk and fear of crime. *Criminology* 27: 697-719.

Lee, Gary R. Residential location and fear of crime among the elderly. *Rural Sociology* 47: 655-669.

Lewis-Beck, Michael. 1980. *Applied regression: An introduction.* Beverly Hills, CA: Sage Publications.

Liska, Allen, E., and William Baccaglini. 1990. Feeling safe by comparison: Crime in the newspapers. *Social Problems* 37: 360-74.

Long, J. Scott. 1983. *Confirmatory factor analysis.* Beverly Hills, CA: Sage Publications.

Lord, Frederic M., and Melvin R. Novick. 1968. *Statistical theories of mental test scores.* With contributions by Allan Birnbaum. Reading, MA: Addison-Wesley Publishing Co.

Mardia, K. V. 1970. Measures of multivariate skewness and kurtosis with applications. *Biometrika* 57: 519-30.

Marini, Margaret M., Anthony R. Olsen, and Donald B. Rubin. 1979. Maximum likelihood estimation in panel studies with missing data. In *Sociological Methodology 1980*, ed. Karl F. Schuessler, 314-57. San Francisco, CA: Jossey-Bass.

Marx, Karl. 1976. *Capital: A critique of political economy.* Vol. 1. Tranlated by Ben Fowkes. With an Introduction by Ernst Mandel. Harmondsworth, U.K.: Penguin Books and New Left Review.

Maxfield, Michael G. 1987a. *See* U.K. Home Office Research and Planning Unit. 1987.

________. 1987b. Incivilities and fear of crime in England and Wales, and the United States: A comparative analysis. Paper presented at the annual meeting of the American Society for Criminology, Montreal, PQ, November.

Mayhew, Pat, David Elliott, and Lizanne Dowds. 1989. *See* U.K. Home Office Research and Planning Unit. 1989.

McDonald, Roderick P. 1985. *Factor analysis and related methods.* Hillsdale, NJ: Lawrence Erlbaum Associates, Publishers.

Mezey, Gillian. Reactions to rape: Effects counselling and the role of health professionals. In *Victims of crime: A new deal?*, ed. Mike Maguire and John Ponting, 66-73. Milton Keynes, U.K.: Open University Press.

Microsoft Windows Version 3.1. Microsoft, Redmond, WA.

Miethe, Terance D., and Gary R. Lee. 1984. Fear of crime among older people: A reassessment of the predictive power of crime-related factors. *The Sociological Quarterly* 25: 397-415.

Mitchell, Juliet. 1971. *Woman's estate.* Harmondsworth, U.K.: Penguin Books.

MS-DOS Version 5.0. Microsoft, Redmond, WA.

Murphy, Kevin, Edward Praught, and Dave Paton. 1989. *See* Statistics Canada, Social Survey and Housing, Family and Social Statistics Divisions. 1989.

Muthén, Bengt. 1983. Latent variable structural equation modeling with categorical data. *Journal of Econometrics* 22: 43-65.

Nagel, Ernest. 1979. *The structure of science: Problems in the logic of scientific explanation.* Indianapolis, IN: Hackett Publishing Co.

National Opinion Research Centre, University of Chicago. 1967. Attitudes and experience questionnaire: Victimization study. *See* The President's Commission on Law Enforcement and Criminal Justice. 1967.

NOP Market Research Limited. 1987a. A report on a survey conducted by NOP Market Research Limited on behalf of the Home Office: 1984 British Crime Survey technical report. In *British Crime Surveys, 1984*, by Principal Investigator, Home Office Research and Planning Unit, 1-24. Data file documentation. ICPSR, 8685.

________. 1987b. Main Questionnaire. In *British Crime Surveys*, by Principal Investigator, Home Office Research and Planning Unit. Data file documentation. ICPSR, 8685.

________. 1987c. Follow-up Questionnaire. In *British Crime Surveys*, by Principal Investigator, Home Office Research and Planning Unit. Data file documentation. ICPSR, 8685.

Principal Investigator, Home Office Research and Planning Unit. 1987a. *British Crime Surveys, 1984.* Ann Arbor, MI: Inter-University Consortium for Political and Social Research. Machine-readable data file. ICSPR, 8685.

________. 1987b. *British Crime Surveys, 1984.* Data file documentation. ICSPR, 8685.

________. 1987c. *British Crime Surveys, 1982.* Data file documentation. ICPSR, 8672.

Quine, Willard Van Orman. 1960. *Word and object.* New York, NY: Technology Press of The Massachusetts Institute of Technology and John Wiley & Sons.

Rohe, William M., and Raymond J. Burby. 1988. Fear of crime in public housing. *Environment and behavior* 20: 700-20.

Rubin, Donald B. 1976. Inference and missing data. *Biometrika* 63:581-92.

Rubin, Paul H., and Chris W. Paul II. 1979. An evolutionary model of taste for risk. *Economic inquiry* 17: 585-96.

Sacco, Vincent. 1990. Gender, fear, and victimization: A preliminary application of power-control theory. *Social Spectrum* 10: 485-506.

________, and William Glackman. 1987. Vulnerability, locus of control, and worry about crime. *Canadian Journal of Mental Health* 6: 99-111.

________, and Holly Johnson. 1990. *See* Statistics Canada, Housing, Family and Social Statistics Division. 1990.

Saris, W. E., J. Den Ronden, and A. Satorra. 1987. Testing structural equation models. In *Structural modeling by example: Applications in educational, sociological, and behavioral research*, ed. Peter Cuttance and Russell Ecob, 202-20. Cambridge, U.K.: Cambridge University Press.

Shiang-Jeou Lillian Shyu. 1989. Fear of crime: A structural equation modeling approach. Ph.D. diss., Wayne State University.

Skogan, Wesley G., and Michael G. Maxfield. 1981. *Coping with crime: Individual and neighborhood reactions*. Beverly Hills, CA: Sage Publications.

Smith, Susan J. 1984. Crime in the news. *British Journal of Sociology* 24: 289-95.

Smith-Lovin, Lynn. 1979. Behavior settings and impressions formed from social scenarios. *Social Psychology Quarterly* 42: 31-43.

Sparks, Glenn G., and Robert M. Ogles. 1990. The difference between fear of victimization and the probability of being victimized: Implications for cultivation. *Journal of Broadcasting and Electronic Media* 34: 351-58.

SPSS/PC+ Version 4.0. SPSS, Chicago, IL.

Statistics Canada. 1989. *See* Statistics Canada, Housing, Family and Social Statistics Division. 1989.

Statistics Canada, Housing, Family and Social Statistics Division. 1989. *The General Social Survey--Cycle 3.* Ottawa, ON: Ministry of Industry, Science, & Technology Canada. Machine-readable data file.

________. 1990. *Patterns of criminal victimization in Canada*. By Vincent Sacco and Holly Johnson. Ottawa, ON: Ministry of Industry, Science, & Technology Canada.

Statistics Canada, Social Survey and Housing, Family and Social Statistics Divisions. 1989. *The General Social Survey--Cycle 3: Public use micro data file documentation and user's guide*. Ottawa, ON: Ministry of Industry, Science, & Technology Canada. Machine-readable data file documentation.

Stinchombe, Arthur L., Rebecca Adams, Carol A. Heimer, Kim Lane Scheppele, Tom W. Smith, and D. Garth Taylor. 1980. *Crime and punishment: Changing attitudes in America.* San Francisco, CA: Jossey-Bass, Publishers.

SYSTAT for Windows Version 5. SYSTAT, Evanston, IL.

Taylor, Ralph B., and Margaret Hale. 1986. Testing alternative models of fear of crime. *The Journal of Criminal Law and Criminology* 77: 151-89.

The Concise Oxford Dictionary of Current English. 1990 ed. S.v. "rape".

The President's Commission on Law Enforcement and Criminal Justice. 1967. *Criminal victimization in the United States: A report of a national survey.* By Philip H. Ennis. Washington, DC: U.S. Government Printing Office.

Tritt, Howard. 1986. The underlying constructs of a college student's fear of crime on a college campus: A demographic and social analysis. Ed.D. diss., The University of Akron. UMI, 8616982.

Trivers, Robert L. 1972. Parental investment and sexual selection. In *Sexual selection and the descent of man, 1871-1971*, ed. Bernard Campbell, 136-79. Chicago, IL: Aldine Publishing Co.

Tuchfarber, Alfred J., Jr., William R. Klecka, Barbara A. Bardes, and Robert W. Oldendick. 1976. Reducing the cost of victim surveys. In *Sample surveys of victims of crime*, ed. Wesley G. Skogan, 207-22. Cambridge, MA: Ballinger Publishing Co.

Tyler, Tom R. 1980. Impact of directly and indirectly experienced events: the origin of crime-related judgements and behaviors. *Journal of Personality and Social Psychology* 39: 13-28.

U.K. Central Statistical Office. 1985. *Monthly digest of statistics.* London, U.K.: Her Majesty's Stationary Office.

U.K. Home Office Reearch and Planning Unit. 1984. *Victims of crime: The dimensions of risk.* By Michael R. Gottfredson. London, U.K.: Her Majesty's Stationary Office.

________. 1985. *Taking account of crime: Key findings from the 1984 British Crime Survey.* By Mike Hough and Pat Mayhew. London, U.K.: Her Majesty's Stationary Office.

________. 1987. *Explaining fear of crime: Evidence from the 1984 British Crime Survey.* By Michael Maxfield. London, U.K.: Her Majesty's Stationary Office.

________. 1989. *The 1988 British Crime Survey*. By Pat Mayhew, David Elliott, and Lizanne Dowds. London, U.K.: Her Majesty's Stationary Office.

U.K. Laws, Statutes, etc. 1976. *Sexual Offences (Amendment) Act, 1976*, pt. 2, c. 82.

U.K. Office of Population Censuses and Surveys. 1980. *Classification of occupations and coding index*. London, U.K.: Her Majesty's Stationary Office.

U.S. Department of Commerce. 1973. *See* U.S. Department of Commerce, Social and Economic Statistics Administr·'ion, Bureau of the Census. 1973.

U.S. Department of Commerce, Social and Economic Statistics Administration, Bureau of the Census. 1973. *Statistical abstract of the United States 1973*. Washington, DC: U.S. Government Printing Office.

U.S. Department of Justice. 1972. *Crime in the United States: Uniform crime reports--1971*. Washington, DC: U.S. Government Printing Office.

________. 1973. *Crime in the United States 1972: Uniform crime reports*. Washington, DC: U.S. Government Printing Office.

U.S. Department of Justice, Bureau of Justice Statistics. 1984. *Victimization and fear of crime: World perspectives*. Edited by Richard Block. Washington, DC: U.S. Government Printing Office.

U.S. Department of Justice, Law Enforcement Assistance Administration, National Institute of Law Enforcement and Criminal Justice. 1979. *Reactions to crime: A critical review of the literature*. By Fred DuBow, Edward McCabe, and Gail Kaplan. Washington, D.C.: U.S. Government Printing Office.

Ward, Russell A. 1984. *The aging experience: An introduction to social gerontology*. New York, NY: Harper & Row, Publishers.

Warr, Mark. 1984. Fear of victimization: Why are women and the elderly more afraid? *Social Science Quarterly* 65: 681-702.

________. 1985. Fear of rape among urban women. *Social problems* 32: 238-250.

________. 1987. Fear of victimization and sensitivity to risk. *Journal of Quantitative Criminology* 3: 29-46.

________, and Mark Stafford. 1983. Fear of victimization: A look at the proximate causes. *Social Forces* 61: 1033-43.

Weaver, James, and Jacob Wakshlag. 1986. Perceived vulnerability to crime, criminal victimization experience, and television viewing. *Journal of Broadcasting and Electronic Media* 30: 141–58.

Wheaton, Blair, Bengt Muthén, Duane F. Alwin, and Gene F. Summers. 1977. Assessing reliability and stability in panel models. In *Sociological methodology 1977*, ed. David R. Heise, 84–136. San Francisco, CA: Jossey-Bass.

Wilkins, Leslie T. 1964. *Social deviance: Social policy, action, and research.* London, U.K.: Tavistock Publications.

Wilkinson, Leland. 1990a. *SYSTAT: Data.* Evanston, IL: SYSTAT.

________. 1990b. *SYSTAT: Statistics.* Evanston, IL: SYSTAT.

________. 1992. *SYSTAT for Windows Version 5: Statistics.* Evanston, IL: SYSTAT.

Wilson, Margo, and Martin Daly. 1985. Competitiveness, risk taking, and violence: The young male syndrome. *Ethology and sociobiology* 6: 59–73.

Yin, Peter P. 1980. Fear of crime among the elderly: Some issues and suggestions. *Social Problems* 27: 492–504.

UNABLE TO FILM MATERIAL ACCOMPANYING THIS THESIS (I.E. DISKETTE(S), SLIDES, MICROFICHE, ETC...).

PLEASE CONTACT THE UNIVERSITY LIBRARY.

INCAPABLE DE MICROFILMER LE MATERIEL QUI ACCOMPAGNE CETTE THESE (EX. DISQUETTES, DIAPOSITIVES, MICROFICHE (S), ETC...).

VEUILLEZ CONTACTER LA BIBLIOTHEQUE DE L'UNIVERSITE.