FEAR OF CRIME AND DESIGN: EXPLORING THE LINKAGES IN A SENIORS' HOUSING COMPLEX

by

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ABSTRACT

This project explores the influence of environmental factors on older adults' fear of crime. Based on the crime prevention through environmental design (CPTED) model, four environmental domains were examined: natural access control, natural surveillance, territoriality and maintenance. These are linked to fear of crime using person-environment theory. The data used in this study was based on a questionnaire comprised of structured questions provided to a sample (n=102) of older residents living in an age-heterogeneous housing complex in Vancouver, British Columbia. Respondents evaluated environmental features linked to the CPTED model and reported on self-perceptions of crime and their surrounding neighbourhood. Findings suggest that fear of crime is significantly correlated with gender and social disorder variables. It is concluded that, in terms of fear of crime, neighbourhood context variables have limited explanatory power based on this pilot project, but further research is necessary to establish more definitive results.

DEDICATION

This project would not have been possible had it not been for the tenants of Sunset Towers. The experience of working with these individuals over the past six years will be an undeniable influence on me for the rest of my life. This paper is dedicated to them and three others, who touched my life, albeit briefly, though each imparted something lasting - Richard Milgrom, Bubbi Brown and Rachel Schlesinger.

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GLOSSARY

Senior/Older adult - The definition used in this study is taken from the lead provided by BC Housing whose official policy is to identify anyone over the age of 55 as a senior.

1 INTRODUCTION

Older adults face far lower risks of being victims of crime than any other age group, yet they consider fear of crime as one of their predominant concerns (Statistics Canada, 2001, Pain, 1997, Ferraro & LaGrange, 1988, Sharp & Dodder, 1985, Lavrakas, 1982). Podnieks (1992) has found that 20% of elderly people report being afraid of going out alone in their neighbourhood and 24% of older women reported being more fearful compared with 9% of older men. Studies looking into the phenomenon of fear of crime reveal that feelings of vulnerability among older people typically originate from their perception of safety within their own communities. This fear can undermine a sense of control and present a powerful disincentive to an older person to leave their home. Loss of confidence in one's neighbourhood consequently impacts upon an older person's health status and may influence the decision to live independently in the community.

The present study will consider older persons' perceptions about selected environmental design features of the seniors housing complex in which they live. The purpose is to explore perceptions about safety and feelings about fear of crime by asking older residents questions about environmental variables associated with the four Crime Prevention Through Environmental Design (CPTED) strategies. Natural access control, natural surveillance, territoriality and maintenance are the CPTED strategies that provide the focus for the questionnaire given to a small sample of older residents. These strategies, as well as the theoretical perspective that links environment and behaviour known as the Ecological Theory of Aging, will inform the evaluation of this survey.

2 LITERATURE REVIEW

2.1 Victimization Rates

Crime has become an increasingly common part of the world we live in. Yet, to what extent are seniors being targeted? The best available evidence from the 1999 General Social Survey complied by Statistics Canada (2001) indicates not only that the prevalence of personal victimization for persons aged 65 and older (approximately 8%) is less than other age groups (40% for those aged 15-24, 31% for those aged 25-44 and 20% of those aged 45-64) but, that the prevalence of personal victimization decreases with age. Furthermore, older adults are 15 times less likely to be victimized than those aged 15-24, 8 times less likely than those aged 25-44, and nearly four time less likely than those aged 45-64 (Statistics Canada, 2001: 6). Using figures from the United States, this low-risk pattern remains the same regardless of the particular crime category. Murder rates and non-violent crimes against individuals are lower for the elderly than any other age group (US Department of Justice, 2005). For the purposes of this paper, it is interesting to note that older victims are more likely to be victimized in a public space or in close proximity to their home, and that crimes perpetrated against the elderly have a higher completion rate (US Department of Justice, 2005).

While the likelihood of being a victim of crime appears to be quite low, the risk is not uniformly spread amongst those 65 and older. When breaking down statistics into gender-based differences for example, older women have higher police-reported violent

victimization rates than older males (Statistics Canada, 2001). Conversely, older men have higher rates of assault, robbery and offences causing death perpetrated against them than older women (Statistics Canada, 2001). Notwithstanding the unequal spread of risk, varying definitions and reporting standards have led to underestimates of both the consequences and prevalence of crime victimization (Pain, 1997).

While victimization rates are lower amongst older adults, the consequences may be more deleterious. Evidence of this phenomenon is supported by a small series of studies done several decades ago as well as a more recent government-sponsored report. Physical injury, economic struggle and increased fear of crime are common consequences of victimization of older adults (Bachman, 1992; Clark et al., 1983; Shelton, 1980). For instance, 46% of victims aged 65 and older report receiving some form of physical injury as compared to 29% of younger victims (Clark et al., 1983). Furthermore, the impact of crime on the elderly may have more serious consequences because older adults are often less able to recover from the effects of crime than their younger counterparts. For example, physical injury lasts longer for an older individual, and often involves a lengthy recovery period or even long-term disability. Financial loss may also differently affect older adults, particularly those on fixed incomes whose limited financial resources place challenges on them to absorb unexpected losses. An older adult, for example, who loses money because of theft may need to reprioritize their spending and make difficult decisions about whether to pay for medication or food. Finally, being victimized influences fear of crime or exacerbates existing levels of anxiety by interfering with an older person's self-confidence and feelings of environmental mastery, particularly since victimization erodes a sense of control and independence (Shields et al., 2002).

The accumulated data on victimization rates for older adults support the view that individuals over the age of 65 generally experience lower rates of victimization than younger cohorts. While demographic, social, physical and economic realities may make some segments of the elderly population more vulnerable to victimization, the importance of victimization rates however, pale in comparison to the pervasiveness of an older person's fear of crime, which is grossly disproportionate to the actual probability of them being a victim of crime.

2.2 Fear of Crime

As established in the previous section, older adults face far lower risks of being victims of crime than other age groups, however research suggests that they have higher levels of fear of crime (Joseph & Stockton, 1997, LaGory, 1986, Sharp & Dodder, 1985). While numerous studies have examined the issue from different angles, including distinguishing 'fear of crime' from 'risk interpretation' (Wilcox, Quisenberry & Jones, 2003), fear of crime endures as the preferred term in academic circles. Fear of crime refers to a lack of a sense of security and/or feelings of vulnerability (Ward et al., 1990). Fear and anxiety are part of our body's instinctive reaction system, as such they are physiological reactions to environmental triggers (Malvin et al., 1997). A person's emotions and mental attitudes will also play a part in the response. It becomes dangerous when the distress and/or fear remains for a long period of time, or reoccurs from time to time, which can potentially disable a person from leading their life as they normally would. Some older people may be at risk because the fear of crime may engender social isolation and a poor quality of life.

Historically, interest in fear of crime and the elderly has waxed and waned. There was an early period of research activity (1970's – early 1980's) and then a period of marked decline when a fewer number of articles were published. Interestingly, there is a converse trend amongst completed dissertations and thesis papers, as the number has grown consistently since the 1970's. For example, a search on database for theses and dissertations revealed that between the years 1975 – 1985 there were 10 unpublished studies whereas a decade later, between the years 1995-2005, there was a total of 18 papers produced.

Most peer-reviewed studies that have explored the link between age cohorts and fear of crime indicate that older people tend to be disproportionally represented compared with other age groups in reporting higher levels of fear of crime (Beaulieu et al, 2003; Cozens et al., 2002; Benson, 1997). However, a limited number of such studies have found no significant differences between age groups (Shields et al., 2002; Rohe & Burby, 1988). For example, in an Australian study into the fear of crime, older respondents did not have significantly higher levels of fear, though women, at all ages, reported higher levels of fear of crime than men (Ranzijn et al., 2002). Attempting to elucidate the possible association between fear of crime and age, Pain (1997) completed 42 in-depth interviews with older adults. She suspected that ageism might explain part of the relationship and her qualitative analysis supported the notion that older people internalize negative stereotypes about fear of crime and behaved according to the stigma. While it is difficult to provide reliable and valid research in support of the widespread existence of ageist attitudes, it is nonetheless an important factor to consider.

The level of anxiety related to fear of crime experienced by an older person depends on a number of factors, including: physical and mental health status, social interaction, perceptions about the neighbourhood, history of victimization and financial security (James et al., 2003, Pain, 1997). Age-related impairment of mobility, hearing and visual acuity, for example, is known to undermine an older person's confidence and minimize sense of security. In reality, the lack of confidence of older adults may be due to any one or a combination of the above factors. An older adult with poor eyesight may have difficulties surveying an area and therefore feel vulnerable. Fearful older people also tend to have higher levels of psychological distress (Beaulieu et al., 2003). Depression results in negative perceptions that predispose older individuals to ongoing distress and increased worries that eventually lead to isolation from other people. LaGory and colleagues (1986) found that for persons aged 60 and over, fear of crime was strongly associated with reports of lower subjective well-being. On the other hand, physical or perceived vulnerability may encourage older people to behave more cautiously and therefore practically avoid putting themselves at risk of victimization (Greve, 1998). Results from another dated study suggest that this may be true for some older adults. Lavrakas (1982) reports that urban residents who are older, poor, female or from an ethnic minority group are more likely to restrict their behaviour because of a fear of crime.

Subsequent researchers elaborate on this conclusion by linking personal characteristics to the environment. In their study involving African-American seniors, Joseph & Stockton (1997), found a statistically significant correlation between fear of crime and personal vulnerability resulting in a limitation of the individual's social

activities. The suggestion that social interaction is an important variable is further corroborated by Kennedy & Silverman (1984). They found that fear of crime is reduced by social interaction with friends and neighbours, but as the level of social activity increases so does the fear of crime. Therefore, social interaction may have some stress-buffering effects in initially reducing feelings of insecurity, but as social activities the mounting pressure to manage social and physical environments makes the older person increasingly uncomfortable. Furthermore, while the demographic, social network and victimization variables included in Cozens, Hillier & Prescott's study (2002) it appears that higher levels of education[1] were strongly associated with a sense of safety.

Fear of crime influences the adaptive capacity of an aging individual. Initially, it provides a necessary sense of caution and awareness, but beyond a certain threshold fear of crime becomes a disabling influence impacting adjustment to real life conditions.

2.3 Ecological Fear Factors

Older people need to feel a sense of control over the environment in which they live. While their abilities and needs vary widely, older adults seem to become bound over time to a constricted physical area. In this way, they become more dependent on their surrounding community to provide for their physical, social and emotional needs. Given the pervasive sense of fear of crime amongst the elderly, investigators have turned their attention to which environmental variables may produce feelings of fear.

Early research efforts in gerontology focused on two factors: housing type, and urban and rural comparisons. Some studies explored the possible impact that housing

[1] The level of educational attainment influences individual attitudes, values and behaviours and therefore higher levels of education may ensure access to those resources that resist the development of fear of crime.

type, such as public housing complexes and age-segregated vs. age-integrated facilities, had on variations in fear among the elderly (Clarke & Lewis, 1982; Huth, 1981; Gubrium,1974). Findings were largely inconclusive about the actual relationship between housing type and fear of crime (Normoyle & Foley, 1988). The second popular method used to investigate possible environmental linkages was through urban and rural comparisons (Lavrakas, 1982; Lee, 1982). In a rural-based sample of older adults, results suggested that 71 % of the participants felt safe in their neighbourhood (Shields et al., 2002), whereas others (Ranzijn et al., 2002;Cutler et al., 2002; Statistics Canada 2001, US Department of Justice, 2005) suggest that older adults living in urban settings consistently express higher levels of fear of crime. Over time, the environmental variables most consistently associated with fear of crime became urban location, building maintenance and territorial markers.

Another factor that has emerged in the literature on fear of crime is perceptions about building maintenance. Visibility of illegal activities, such as graffiti and vandalism have been associated with higher fear of crime than those building designs that were well-maintained (Cozens et al., 2002). In an early, yet important study, that has not been replicated, signs, fences and external surveillance devices were used as measures of territoriality. The researchers investigated whether such measures affected the fear of crime among older home-owning adults. Results indicated that individuals who reported a stronger sense of territoriality had a lower fear of crime (Patterson, 1977). Thus, there appear to be a number of environmental features that contribute to a sense of security and reduce fear of crime in older adults.

There is not an extensive collection of gerontological literature on ecological variables and their influence on fear of crime, instead, many insights come from searches of the broader literature. Intuitively, environments that offer good surveillance opportunities, adequate lighting and appropriate vegetation would seem to be associated with low levels of fear. Investigators have affirmed this hypothesis using a variety of sample groups. A study conducted on an undergraduate student population revealed that environments considered unsafe had poor lighting, closed or hemmed-in spaces increasing the opportunity for predatory attacks or stalking (Loewen et al., 1993). Vrij and Winkel (1991) also supported the idea that there is a relationship between unsafe locations, lighting and activity levels. Their research suggested that quiet and deserted streetscapes with poor lighting were perceived to be unsafe, while lighting enhancements were associated with lower subjective victimization risk. Kuo & Sullivan (2002) recognized the presence of appropriate vegetation as a factor in lowering crime rates. Additionally, vegetation that allows people to see in the distance was found to be associated with lower reports of fear of crime (Fisher & Nasar, 1992). Using a sample of 512 residents living in Baltimore, Maryland, a research team tested, the block environmental inventory (BEI), a tool that assessed various crime and fear variables (Perkins et al., 1992). The results from this empirical study indicated that negative cues of social and physical disorder, as well as limited territorial functioning and architecturally defensible space characteristics, are related to negative perceptions about crime in the area.

Future research should concentrate on the identification of features that may promote feelings of safety and security instead of the traditional approach that focuses on

negative factors that are associated with fear of crime. Nonetheless, in seeking to understand how the ecological factors affect personal feelings of fear, there are a number of environmental variables, such as building maintenance, poor lighting levels and closed spaces that have influence. These characteristics comprise the basis, as structured by the Crime Prevention Through Environmental Design (CPTED) framework, for the questions asked in a survey that will be given to older adults living in Vancouver seniors housing complexes. The search for environmental influences that encourage, or alternatively discourage, a sense of fear reveals that an older adult's available resources play a role.

2.4 Theoretical Approach

Being able to manage the stress of an intimidating or threatening environment is an indicator of a successful coping strategy. It has been argued that the key to managing this stress is utilizing a combination of personal and environmental resources. This particular idea emerges from a model developed by Lawton & Nahemow (1973). Their Competence-Press Model illustrated the mechanics of environmental coping by older adults. More specifically, Lawton & Nahemow suggest (1973; 1998) through their Ecological Theory of Aging, that a dynamic interaction that occurs between the demands of an environment and an individual's personal resources is what eventually results in a particular behavioural response. This interaction has a concomitant effect on an older person's well-being. For instance, older people with higher physical and mental competence will likely experience greater satisfaction with their environment as the person-environment interaction comfortably falls within an individual's range of adaptation. Mismatches between the capacity of older adults and the demands of the environment can lead to maladaptive behaviour and a negative effect. Finding

environments congruent with an older person's needs can also become increasingly difficult as time passes. Since the aging process is associated with a myriad of physiological, psychological and social changes, older people will likely experience more intense behavioural demands from their environment as a result. To remedy this situation, the environmental needs of older adults can be addressed through appropriate design interventions. Designers and planners who strive to achieve a higher level of congruence between the capabilities of older people and the utility of the surrounding environment would benefit from knowing about the results of a study of how fear of crime may affect the fit between an older individual and his/her surrounding environments (Parmalee & Lawton, 1990).

2.5 Conceptual Dimensions of Crime Prevention Through Environmental Design

2.5.1 History

In the late 1960s, the growing problem of crime and fear of crime led to greater efforts to understand crime prevention. The first foray into the area of environmental criminology was a book written in 1961 by Jane Jacobs entitled, The Death and Life of Great American Cities. Although she was not an academic, Jacobs' astute observations of urban life touched upon the importance of natural surveillance, 'eyes on the street', as a necessary part in the creation of safe and livable urban environments. Ten years later, notions about crime control evolved further when C. R. Jeffery, a noted American sociologist, published his insights about the links between crime prevention and environmental design. In his book, Crime Prevention Through Environmental Design,

Jeffery argued for the need of environmental engineering as a means of preventing crime, and cushioned his ideas using various social science theories about behaviour modification and biosocial learning. These works influenced a great number of subsequent studies, but only one became truly seminal.

Oscar Newman, an American architect, used his academic interests in architecture to write a book founded on the principal of architectural determinism, which he used to support the observation that in urban, residential environments, the higher the building the higher the crime rate. Defensible Space: Crime Prevention through Urban Design explored the underlying mechanisms at play in bringing a space under the control of the community. The work was based on a large sample survey of low-income housing project residents, where crime rates were high and the residents had withdrawn from the community. Newman recognized that certain aspects of residential environments appear to contribute to criminal activities and to counteract this association he offered a theory of defensible space. Defensible space refers to "... the range of mechanisms - real and symbolic barriers, strongly defined areas of influence, and improved opportunities for surveillance – that combine to bring an environment under the control of its residents." (Newman, 1972:3). Further, he specified four conceptual recommendations: territoriality, natural surveillance, perception of design and the association between building sites and their safe or unsafe surroundings (Newman, 1972). Newman developed this typology in the hopes of restoring 'communities in crisis' by redeveloping public housing projects to make them small-scale and street-oriented and it seemed to work in a select number of settings (Newman, 1996), though it was not implemented without criticism.

In response, a number of studies challenged the traditional views of defensible space. Normoyle and Foley (1988) investigated the suggested relationship between building height and fear of crime in older adults and found no marked differences among high- and low-rise public housing residents. Other critics came forward questioning Newman's research methodology (Mawby, 1977), his approach of architectural determinism (Labs, 1989) and his contextual myopia (Moran & Dolphin, 1986), as well as the ethical issues surrounding a movement of social cohesion by design (Yancey, 1971). In response to the criticisms and misinterpretations, Newman published a book years later entitled, *Creating Defensible Space*. His message, more carefully qualified this time around, was that, at a neighbourhood scale, the unique needs and visions of small community groups must be used to guide the redesign of the physical environment. Failing that, a just and sustained change in perceptions about community safety will not occur. While not everyone may agree that the physical environment is the most salient determinant, Newman's work suggests that it be an important factor in preventing crime.

2.5.2 Conceptual Framework - Crime Prevention Through Environmental Design (CPTED)

The legacy of these ideas has endured through the concept of Crime Prevention through Environmental Design (CPTED), which has been embraced by many city planners as part of their urban crime prevention strategy. The main goal of this concept is to eliminate or reduce opportunities for crime through design of physical environments. CPTED is used to demonstrate how proper design, effective use and maintenance of the physical environment can prevent crime (Crowe, 1991). Essentially, it is a comprehensive design approach that combines traditional views about crime prevention with newer

theories on the interrelationships between the physical environment, human behaviour and crime prevention.

When incorporated in the early development stages of a building project, CPTED strategies can result in reduced crime and reduced fear of crime (Taylor, 2002). Four CPTED design strategies have emerged: natural access control, natural surveillance, territoriality, and maintenance. The first, natural access control is defined as provision of cues, real or psychological, that will appropriately direct human behaviour in a desirable direction (Jeffery, 1977). These cues include appropriate placement of signage, fencing, lighting and landscaping into an urban environment to discourage undesirable or nuisance behaviours. For instance, minimizing the number of access points in and out of a building will lessen opportunities for criminal activity to take place. Increasing visibility is the idea behind the second CPTED strategy - natural surveillance. This manifests as the construction of unobstructed view corridors, which would increase the likelihood of identifying someone perhaps thinking about or engaging in a criminal activity. A parking lot visible from the street has more natural surveillance opportunities than an underground parking lot. The third principle, territoriality, involves the idea of attachment to space. When people take ownership of a space they often personalize it and this effort becomes an environmental cue for people to read. The demarcation of territory sets the guidelines, using real or psychological cues as to what constitutes desirable and undesirable uses of space. For example, the strategic use of landscaping can prevent people from taking short cuts through a semi-private area outside a building. Finally, supported by the 'broken window theory' (which purports that a symbol of disorder like a broken window transmits the message that no one cares) is the maintenance concept; the

last CPTED design strategy. The assumption is that a cared-for environment will lessen the risk of criminal activity and this continuity and consistency again sends a message about acceptable uses of that particular environment. For example, tagging of or graffiti on walls has to be quickly cleaned up or painted over with an artistic mural so as not to attract more taggers.

In summary, the CPTED framework has the greatest potential for offering a view from which to appreciate how environmental design affects human behaviour. In order to more fully explain the relationship between fear of crime in older adults and varied environmental influences, the concepts of CPTED will be utilized to explore the conditions that further specify this relationship.

2.6 Linkage between the Theoretical Approach and Conceptual Framework

The elements of press-competence theory and CPTED design strategies are interrelated in a number of ways. According to the press-competence theory, an older person adapts physically and/or psychologically to the demands of his or her surroundings (Lawton & Namehow, 1973). With CPTED, the relationship between the physical environment and the behaviour of people is framed to include those environmental features that control undesirable behaviour and support legitimate uses of space (Crowe,1991). In an environment where certain cues exist, and depending on the resources of the older individual, the effect of a particular stressor might be a negative one. For example, on a pathway without fencing (related to the CPTED concept of natural access control) an older person might feel vulnerable to their environment

because the possible interactions with people are not controlled or managed. They may overcome this feeling if they have confidence in their abilities to respond to the unknown potentials that exist within such a situation. Alternatively, they may give in to their insecurity and avoid the route altogether. Older people with lower competence will experience more intense press from their surroundings as a result of their increased sensitivity to environmental cues and consequently become more fearful. Thus, person-environment fit underlies the relationship of the four CPTED domains and their relationship with crime and victimization.

3 PRESENT STUDY

3.1.1 Research Statement & Hypotheses

Fear of crime in older adults can be best understood as a complex interaction of personal resources and environmental cues. Although the specific mechanisms surrounding fear of crime and physical environment variables are not clear: there is general consensus that environmental variables play an important role in perceptions about safety. In spite of the fact that adequate theoretical formulation is lacking, it is the purpose of the present research study to address this issue by exploring fear of crime in an older adult population and to test a set of hypotheses derived from the existing literature. This exploratory project will examine the extent to which the four design elements - natural access control, natural surveillance, territoriality, and maintenance – influence perceptions of fear among older adults living in an age-heterogeneous seniors' housing complex.

Eight hypotheses were tested in the present study. The first four were derived from the CPTED concepts, where it is expected that older adults who believe:

1) *there is not enough natural access control (inadequate fencing) in their physical environment exhibit higher fear of crime;*
2) *there are not enough natural surveillance opportunities (sidewalks are inadequately lit)in their physical environment exhibit higher fear of crime;*
3) *there are not enough territorial cues (distinction between private and public space) in their physical environment exhibit higher fear of crime;*

4) *the surrounding area is poorly maintained (landscape conceals activity) exhibit higher fear of crime.*

Although the specific mechanisms surrounding fear of crime and the physical environment are not clear: there is some sense that signs of social disorder, like litter, public drinking and drug dealing, will also play an role in perceptions about safety (Skogan, 1990). The fifth hypothesis states that *negative report of the presence of undesirable behaviours will be associated with fear of crime among the research subjects*

Previous research suggests that gender and level of education are important variables for predicting an older individual's sense of fear. Therefore, it is hypothesized that 6) *there will be a positive relationship between socio-demographic variables and fear of crime.*

Pain (1997) found that older adults who were victimized were more fearful of crime. It is hypothesized that 7) *there will be a positive relationship between fear of crime and history of victimization.*

The last hypothesis, informed by Lawton's Ecological Model of Aging (1987), suggests that 8) *older people with fewer personal resources (such as the lack of opportunity to meet friends and family, having more than one chronic condition, and those who have not done anything proactive to increase their sense of security) will report a higher fear of crime.* Older adults with fewer resources will not be as able to cope as well with the perceived threats in the surrounding environment.

4 METHODS

In this chapter, the survey tool developed for the study and the site at which the research is conducted is described. A description of the participants as well as the various variables to be used in the subsequent bivariate and multivariate analysis is also outlined.

4.1 Survey Tool

The researcher developed a five-page survey and included questions pertaining to fear of crime and opinions about environmental design features surrounding the building in which the intended participants lived. The questionnaire was designed using the CPTED conceptual framework (Crowe, 1991), though other information collected from relevant studies and surveys helped guide the development of particular questions (Elmbridge Borough Council; 2004, Williams et al., 2000; Normoyle et al., 1988; Ortega and Myles, 1987).

The questionnaire was piloted in a BC Housing complex, called Steeves Manor, which had a similar proportion of senior inhabitants to that of the target complex for this study called Sunset Towers. The general purpose of the pilot was to test how clear the questionnaire was and how easy the residents found it to follow. An on-site staff person recruited four participants to read through the survey and provide feedback to the author. Based on their input, several adjustments were made to the survey to clarify the wording of questions.

The final version (see Appendix A) included 37 close-ended questions, which were grouped into three sections. The first section covered safety and fear of crime

concerns. Respondents were asked questions such as whether they felt the surrounding neighbourhood was safe, whether fear of crime had affected their quality of life, and if they had been a victim of crime. The second section included questions about neighbourhood context where several questions were asked about specific CPTED concepts. The third and final section covered socio-demographic information like demographic status, health problems, etc. All participants were advised that the researcher would code the information collected from them so that their individual responses would remain anonymous.

4.2 Sunset Towers

The sample used in this study was drawn from a population of older adults living in Sunset Towers, a low-income housing complex located in the West End of Downtown Vancouver. This area is a densely populated neighbourhood home to a diverse group of residents, 85% of whom live in rented accommodations (Statistics Canada, 1996). Young people, aged 20-39, comprise 52% of residents living in the West End compared to 38% for the city as a whole, whereas the proportion of West End residents over 65 years of age is roughly similar to that found for the city overall at 13% (Statistics Canada, 1996). The West End is well-supported with many commercial amenities such as retail, restaurant and nightlife venues; it is also located close to Stanley Park, and is a social and residential hub for Vancouver's gay and lesbian community. With respect to crime, the area is relatively safe compared to the city overall, although when figures for assault, robbery and break-and-enters occurring in the month of February 2004 are compared to

those of February 2005 and 2006, there appears to be a modest increase (City of Vancouver, 2006).

Sunset Towers is found in an ideal location in the West End, at the bottom of a hill and close to several bus stops. Built in 1975, the two concrete towers (Appendix D) – one on Barclay Street rising 15 stories, the other on Haro Street rising 22 stories – are connected to each other and have a total of 500 suites making Sunset Towers one of the largest seniors' housing complexes in British Columbia. The complex is managed by the province's public housing provider, BC Housing. Many of the suites are bachelor apartments though there are one-bedroom units as well and there are a number of large common room areas and garden spaces for residents to congregate. Though Sunset Towers is considered to be a seniors housing complex, the composition of tenants is mixed, 60% of residents are seniors and 40% are younger people with mental illness and/or physical disability.

All residents of Sunset Towers live in independent accommodations, they cook their own meals, wash their own clothes, etc. However, there are some support services to help individuals 'age in place' like cluster care home support services, an in-house complimentary meal program, health and wellness seminars, podiatry clinics, etc. The researcher has worked in these buildings for over five years as a program coordinator in the Sunset Towers Advocacy and Resources Office (STAR). Over this time period, she has established a good reputation amongst the tenants, which helped her to gain access to participants.

4.3 Procedure

Prior to administering the questionnaire, approval for the research study was secured from Simon Fraser University Department of Ethics and from BC Housing's property portfolio manager for Sunset Towers. Once the approval for data collection was received, the principal investigator began recruiting participants.

Participation in this study was completely voluntary. Older adults living in Sunset Towers were individually approached by the principal investigator and given a brief overview of the study. If a resident seemed open to the invitation to participate they were then given an introductory letter (see Appendix B). This letter outlined the nature of the study, the confidentiality of the information provided to the researcher, and the acknowledgement that participants were free to withdraw from the study at any time. In addition this letter also advised of prize incentives to participants – six Safeway food vouchers, which would be drawn at two different time intervals. To encourage participants to return their surveys early, a draw for two of the Safeway vouchers was held within two weeks of the study's commencement, while the remaining four vouchers were drawn when 100 surveys were returned.

In addition to the introductory letter, participants were also requested to sign a form of consent to participate in the study (see Appendix C). As stated in this form, the procedures used to carried out this research project strictly adhered to all institutional protocol for research involving human subjects at Simon Fraser University. Finally, the letter advised of their option to be provided with the study results if they so requested.

On November 14, 2005, the non-randomized distribution of surveys began. Within two weeks, the researcher advertised for more participants to come forward and

several group sessions were organized. The sessions included 5-10 people who shared the same ethnic background and had a limited ability to read English. Volunteer assistance in this regard was kindly provided by younger members of the same ethnic group who were available to translate difficult terms and clarify confusing items. By December 17, 2005, 102 surveys were collected with only 15 surveys still outstanding.

4.4 Participants

In order to be included in the population under study, only those subjects who (1) live at Sunset Towers, (2) were at least over the age of 55, and (3) were able to give their informed consent were eligible. As mentioned previously, participation in the survey was voluntary provided that written consent was obtained. Respondents were also free to withdraw from the study at any time.

A total of 117 questionnaires were distributed and 102 agreed to participate in the study (an overall response rate of 87%). Of this number, 65% were female and 35% were male. Table 4.1, presents basic demographic data associated with the study sample, separately for males and females, including age, martial status, educational status, number of chronic conditions and length of residence. Participants ranged in age from 55 to 92; and the mean age was 69. Income was not included as a variable of interest because all the participants live in subsidized housing and would likely have an estimated income around $15,000 per year (figure based on single person's maximum 2005 OAS & GIS allowance). Approximately 94% of participants responded that they were non-married, which is not a surprising figure given that most of the suites in Sunset Towers are bachelors. Forty-seven percent of participants revealed that they attended additional schooling or training after completing high school with no significant differences

between the sexes. A greater proportion (52%) of female participants reported having three of more chronic conditions than males (36%). Finally, of the 101 participants who responded to the question about length of residence, slightly over half of them stated they lived at this complex for longer than 10 years.

Table 4.1: Demographic Characteristics of Study Sample by Sex

Demographic	Total	Male*	Female
Age		*Percent*	
55-64 Years	39.0	38.9	39.1
65-74 Years	27.0	25.0	28.1
75 years or over	34.0	36.1	32.8
Marital Status			
Non-Married	94.1	97.1	92.4
Married	5.9	2.9	7.6
Educational Status			
None to Some Schooling	35.0	31.4	36.9
High School Graduation	18.0	20.0	16.9
Post-Secondary Education	47.0	48.6	46.2
Number of Chronic Conditions			
None	21.4	24.2	20.0
One-Two Chronic Conditions	31.6	39.4	27.7
Three or More Chronic Conditions	46.9	36.4	52.3
Length of Residence			
Less than 10 years	45.1	36.1	50.0
More than 10 years	54.9	63.9	50.0

* Thirty-five percent (36) represents the male participation in the study sample and sixty-five percent (64) represents the female participation.

4.5 Specification of Variables

Twenty variables were used in the bivariate and multivariate analyses.

4.5.1 Dependent Variables

Fear of crime has been operationalized in many different ways (Beaulieu, 2003; Ranzijn, 2002; Ward et al., 1990; Normoyle et al., 1988; Rohe & Bubry, 1988; Ferraro & LaGrange, 1987), however, for this research study, five dependent variables were chosen because they captured different aspects of the fear of crime concept reflected in the general literature (Table 4.2).

The first measure, was subjective assessment of neighbourhood safety and this was assessed by asking respondents, "Do you feel the surrounding neighbourhood is generally safe?" (4=very safe, 3=safe, 2=somewhat unsafe, 1=very unsafe). The responses were subsequently dichotomized (4 +3= safe and 2+1=unsafe) to allow for logistic regression. There were no missing cases and the total number of study participants that expressed a feeling that their neighbourhood was unsafe was 31 (30%) and 71 (70%) felt the neighbourhood was safe.

The second measure, perceived crime rate, was derived from the question, "Do you feel the crime rate in your neighbourhood is...high, medium or low? These three response categories were dichotomized ("low=0"vs. "medium-to-high=1") to facilitate bivariate and multivariate analysis and the missing cases (n=3) were recoded into the modal category "medium-to-high" (n=65, 63.7%).

The third variable was a worry scale created out of summing responses to a series of questions that asked about specific threats likely to cause concern in individuals. Respondents were asked, "How worried are you about: theft of personal property; being mugged; being physically assaulted; being verbally assaulted; being harassed or intimidated; and being raped?" (3=very worried, 2=somewhat worried, 1=not worried at all). Missing cases were assigned to modal category for each question and the responses were summed into a new variable called the worry scale, where 0 represented those who were 'not worried' and 1 represented those who were 'worried'. The reliability of the measures associated with the Worry Scale was tested using Cronbach's Alpha. The reliability analysis revealed that the internal consistency for the worry scale has a Cronbach's α of .843, which is well above the rule of thumb of .7 acceptable level.

Finally the fourth and fifth variables were derived from a question that asked respondents to indicate how safe (4=very safe, 3=safe, 2=somewhat unsafe, 1= very unsafe) they felt when they are alone in the surrounding neighbourhood at different times during the day. In order to make the data more manageable, two of the five ordinal variables were recoded into a dichotomy (0=safe and 1=unsafe) and used for subsequent analysis. Responses to the evening and late night questions were selected as the most relevant to exploring the issue of fear of crime as these particular times of the day typically correspond to a heightened sense of fear in most people. Both in the evening and late night, the majority of participants indicated they felt unsafe – 57% and 76% respectively.

Table 4.2: Frequency Distribution for Fear of Crime Dependent Variables

Variables	Coding	Frequency	Valid %
Perceived Neighbourhood Safety	0=safe	71	69.6
	1=unsafe	31	30.4
Perceived Crime Rate	0=low	37	36.3
	1=medium-to-high	65	63.7
Worry Scale	0=not worried	82	80.4
	1=worried	20	19.6
Perceived Safety Evening	0=safe	44	43.1
	1=unsafe	58	56.9
Perceived Safety Late Night	0=safe	24	23.5
	1=unsafe	78	76.1

4.5.2 Independent Variables

In order to explore the predictors of fear of crime, several independent variables (see Table 4.3) were used to investigate the relationship. These variables required recoding for bivariate and multivariate analysis. Such changes were necessary to avoid small numbers in certain categories. The variables were as follows:

Table 4.3: Frequency Distribution for Fear of Crime Dependent Variables

Variables	Coding	Frequency	Valid %
Socio-demographic			
Age	1= 55-64	39	39.0
	2= 65-74	27	27.0
	3= 75+	34	34.0
Sex	0=male	36	35.3
	1=female	66	64.7
Level of education	1=some secondary or less	35	34.3
	2=completed secondary	18	17.6
	3=post-secondary	49	48.0
Length of residence	0=less than 10 years	57	55.9
	1=more than 10 years	45	44.6

Variables	Coding	Frequency	Valid %
Personal Resource			
Visit family & Friends	0=less than once/week	45	44.1
	1=once a week or more	57	55.9
No. of chronic conditions	0=none	22	21.6
	1=1-2	33	32.4
	2=3 or more	47	46.1
Walk without aids	0=yes	66	64.7
	1=no	36	35.3
Action scale	0=no action	18	17.6
	1=some action	52	51.0
	2=more action	32	31.4
Neighbourhood Context			
Presence of undesirable activities/behaviours	0=never-infrequently	41	40.2
	1= regularly	61	59.8
Natural Access Control - Adequate Fencing	0=agree	66	64.7
	1=disagree	36	35.3
Natural Surveillance Adequately lit Sidewalks	0=agree	59	57.8
	1=disagree	43	42.2
Territoriality - Distinction between private and public space	0=agree	61	59.8
	1=disagree	41	40.2
Maintenance – Landscape does not conceals activity	0= agree	68	66.7
	1= disagree	34	33.3
Previous Victimization			
Victim of crime	0=no	57	55.9
	1=yes	45	44.1

Socio-Demographic Variables

Four demographic variables were selected to explore fear of crime in this sample. Age was a continuous variable (originally ranging from 55 -92 years) that was subsequently recoded for bivariate analysis (1=55-64, 2=65-74, 3=75+). Sex was a dichotomized variable where 0= male and 1=female. Level of education was recorded as 1= some secondary schooling or less, 2=completed secondary school, 3=post-secondary.

Length of residence was a continuous variable that was recoded into 0=less than 10 years and 1=more than 10 years.

Personal Resource Variables

Individuals with few social contacts, poorer health status and less mobility may not have the personal resources to withstand the environmental pressures of their physical and social surroundings. Social support is a buffer of stress and this concept was operationalized using the question, "How often do you visit friends and family? (1=never, 2=less than once per week, 3=once to twice per week, 4=three or more times per week). This question was recoded into a dichotomous variable for bivariate analysis, where 1=one or more times per week and 0=less than once per week. The missing cases (n=3) were recoded into the modal category of 'one or more times per week'. This particular sample of older residents was fairly evenly divided in terms of visiting family and friends, 45 (44.1%) individuals reported contact occurred less than once a week and 57 (55.9%) individuals reported contact occurred more than once a week.

Pre-existing health concerns, like multiple chronic conditions, are a genuine source of stress and translate into greater vulnerability. Health status was derived from a series of questions that asked whether the respondent was experiencing any of a list of conditions, including: arthritis; asthma; diabetes; effects of a stroke; hearing loss; high blood pressure; shortness of breath; and vision problems. The responses were summed and then recoded into an ordinal chronic condition scale where 0=none, 1=one to two chronic conditions, 2= three or more chronic conditions because of the distribution. Overall, 22 (21.6%) individuals indicated they had none of the chronic conditions listed, 33 (32.4%) individuals indicated they had between one and two chronic conditions listed

and 47 (46.1%) individuals reported they had three or more of the chronic conditions listed.

To capture personal mobility, respondents were asked about walking without aids (64.7% of those who responded said yes and 35.5% said no). Walking without aids was felt to be the best indicator of personal mobility as it requires the least dependence on external resources or supports.

Older adults who recognize their physical and social vulnerability and take precautions should be, because of this awareness, more likely to express a fear of crime and the action scale operationalized this concept best. Respondents were initially asked, "Have you: attended meetings about seniors' safety issues; restricted outings to daylight hours only; informed someone about your schedule; have a relative or friend check-in with you daily; avoided travelling past certain areas; and added more locks to your door to increase your sense of security in the neighbourhood you live in?" Two questions that concerned joining a neighbourhood watch program and installing a security system were excluded from the action scale as the number of cases in either the yes or no category was too small ($n<4$). Once the responses were regrouped, there were 18 (17.6%) individuals who reported making no change or 'no action', 52 (51%) individuals indicated the made some changes or 'some action' and 32 (31.4%) individuals reported making more changes or 'more action'. The reliability of this scale was .707 alpha and therefore met the accepted cut-off.

Neighbourhood Context Variables

Feeling threatened in one's neighbourhood is strongly correlated with fear. The underlying assumption is that some environmental cues serve as signals that are interpreted by individuals as threats. In the present study, responses to signs of social disorder and the four CPTED concepts- natural access control, natural surveillance, territoriality and maintenance - were included in the analysis of neighbourhood context.

The existing literature suggests several signs of social disorder (Sampson & Raudenbush, 1999; Skogan, 1990), which were reflected in the survey using a series of related questions. The signs of social disorder can be physical (garbage strewn about) as well as social (drug dealing) though all are perceived to be environmental aspects that occur as result of strangers actions (Sampson & Raudenbush, 1999). Respondents were asked to chose the frequency level in which they saw a select number of undesirable activities: people drunk in public spaces, people using or dealing drugs, teenagers hanging out on the streets, litter, and vandalism or graffiti (2=frequently, 1=sometimes, 0=never, 6=don't know). Because the sample size was small (n=102) and the original spread of responses was relatively broad (4 categories), it became necessary to dichtomize the response set. Missing cases were assigned to modal category for each question and the responses were summed into a new variable called the neighbourhood scale (herein referred to as the 'neigh scale'), where 0 represented those who never or infrequently saw undesirable behaviours occurring in the neighbourhood (40% of respondents) and 1 represented those who frequently saw undesirable activities occurring in the neighbourhood (60% of respondents). Reliability analysis revealed that the internal consistency for the neigh scale has a Cronbach's α of .834 and met cut off.

The CPTED section of the survey included at least four questions for each of the four CPTED concept areas. Respondents were asked to read a series of statements and then indicate whether they agreed, disagreed or did not know. To facilitate data analysis and to keep the distribution of responses as tight as possible, a decision was made to incorporate the 'don't know' responses, which totaled 10% or less, into modal categories. Of the series of four questions related to each CPTED concept, only one was selected to represent the concept. The chosen variable represented the best characterization of the CPTED concept relative to the others, as well as it usually had the fewest number of don't know responses.

The first CPTED concept, natural access control, was captured by the variable adequate fencing. As mentioned earlier, the do not know responses (n=9) were recoded into the modal category (agree, n= 66) and so the breakdown of the results were that 58% agreed that the fencing was adequate and 42% disagreed with the statement.

Natural surveillance was the second CPTED concept considered and it was operationalized using a question that asked respondents if they felt that the sidewalks (surrounding Sunset Towers) were adequately lit. After the missing cases (n=4) were recoded into the modal category (agree, n=59), the results were separated into those who agreed with the statement about sidewalk lighting levels (n=59, 58%) and those who disagreed with the statement (n=43, 42%).

The third CPTED concept, territoriality, was captured by the variable distinction between private and public spaces. The missing cases (n=11) were recoded into the modal category and once this change was made, approximately 60% (n=61) agreed with

the statement that there was enough distinction between the public and private spaces and 40% (n=41) indicated they disagreed with the statement.

Finally, the last CPTED concept, maintenance, was operationalized using the variable landscape conceals activity. Respondents were asked to agree or disagree with the statement – Do you feel that the landscaping does not conceal activity? The positive wording of this question was changed at the suggestion of a staff member from BC Housing. After the 'do not knows' (n=10) were recoded, the breakdown of results for this variable were that 67% of the participants agreed with the statement and 33% disagreed.

Victimization Variable

A self-report question that asked, "Have you ever been a victim of crime?" (0=no and 1=yes) was used to assess history of victimization. The majority of participants have not been a 'victim of crime' (n=57, 55.9%).

5 RESULTS

This chapter describes the strategy used to explore the relationship between fear of crime and the environment among older adults and to test the hypotheses mentioned earlier in Chapter 1. The surveys yielded data that were investigated by standard statistical methods using both bivariate and multivariate methods. All data analyses were completed using SPSS statistical software version 13.

5.1 Bivariate Analysis

At the bivariate level, cross-tabulations were used initially to explore the magnitude of difference between the five dependent and the 14 independent variables. For this study, Kendall's tau b and tau c were used to indicate the magnitude and direction of the relationships being investigated. Kendall's tau b was employed for the ordinal variables in which the number of categories or cells was equal and Kendall's tau c was used when the number of categories/cells was unequal. Correlations ranging from zero to .20 are considered weak, those between .20 and .40 are considered moderate, and those over .40 are regarded moderate to strong. A positive value indicates a positive relationship, whereas a negative value indicates a negative correlation or an inverse relationship. For example, a positive correlation between perceived crime rate and number of chronic conditions would suggest that those who view the local crime rate as high would be more likely to also experience a higher number of chronic conditions.

Results from the cross-tabulations are presented sequentially for each of the eight hypotheses tested in this study.

5.1.1 Hypothesis 1 –

Older people who believe that there is not enough natural access control (inadequate fencing) in their physical environment exhibit higher fear of crime.

Under investigation was the association between fear of crime and the CPTED concept of natural access control. To test the hypothesis, one natural access control variable was selected - *adequate fencing*. Statistically significant associations were found for three of the dependent fear of crime variables: *perceived crime rate* (tau b=.301, p≤.001), *neighbourhood safety –evening* (tau b=.229, p≤.05) and neighbourhood safety – late night (tau b= .216 ,p≤.05) (see Table 5.1).

Table 5.1: Bivariate Analysis –CPTED Natural Access Control Variable

Fear of Crime	Natural Access Control
	Adequate Fencing
	Tau b
Perceived Neighbourhood Safety	.136
Perceived Crime Rate	.301***
Worry Scale	.100
Perceived Safety- Evening	.229*
Perceived Safety- Late Night	.216*

*p=≤.05; **p=≤.01; ***p=≤.001

When *perceived crime rate* was the dependent variable, a positive, moderate correlation was found with *adequate fencing* (tau b=.301, p=≤.001). The cross-tabulation (Table 5.2) found below illustrates that respondents who perceived the local crime rate as medium-high were more likely to disagree with the statement that there was adequate fencing.

Table 5.2: Cross-tabulation of Adequate Fencing and Fear of Crime (Perceived Crime Rate)

Fear of Crime-	*Adequate Fencing*			
Perceived Crime Rate	Agree		Disagree	
	(N)	%	(N)	%
Low	31	47.0	6	16.7
Medium-High	35	53.0	30	83.3
Total	66	100.0	36	100.0

tau b=.301, p≤.001

The cross-tabulation between *adequate fencing* and *perceived safety in the evening* was found to be statistically significant. A positive, weak association was found. Those who perceived that the neighbourhood is unsafe were more likely to disagree with the statement that there was adequate fencing (see Table 5.3).

Table 5.3: Cross-tabulation of Adequate Fencing and Fear of Crime (Perceived Safety - Evening)

Fear of Crime-	*Adequate Fencing*			
Perceived Safety- Evening	Agree		Disagree	
	(N)	%	(N)	%
Safe	34	51.5	10	27.8
Unsafe	32	48.5	26	72.2
Total	66	100.0	36	100.0

tau b=.229, p≤.05

The other statistically significant association was found between *adequate fencing* and *perceived safety late night,* which was a weak, positive difference between these variables. Those who perceived that the neighbourhood was unsafe late at night were more likely to disagree with the statement that there was adequate fencing (see Table 5.4).

Table 5.4: Cross-tabulation of Adequate Fencing and Fear of Crime (Perceived Safety – Late Night)

Fear of Crime-	*Adequate Fencing*			
Perceived Safety-Late Night	Agree		Disagree	
	(N)	%	(N)	%
Safe	20	30.3	4	11.1
Unsafe	46	69.7	32	88.9
Total	66	100.0	66	100.0

tau b=.216, p≤.05

5.1.2 Hypothesis 2 -

Older people who believe that there are not enough natural surveillance opportunities (sidewalks are inadequately lit) in their physical environment exhibit higher fear of crime..

The second CPTED concept, natural surveillance, was investigated in this hypothesis using the variable *adequately lit sidewalks*. As shown in Table 5.5, the cross-tabulations with the five fear of crime dependent variables illustrate moderate statistically significant support for three of the variables: *perceived crime rate* (tau b=.355, p≤.001), *perceived neighbourhood safety* (tau b=.213, p≤.05) and *perceived safety late night* (tau b=.333, p≤.001).

Table 5.5: Bivariate Analysis – CPTED Surveillance Variable

Fear of Crime	*Natural Surveillance*
	Adequately Lit Sidewalks
	tau b
Perceived Neighbourhood Safety	.213*
Perceived Crime Rate	.355***
Worry Scale	.128
Perceived Safety- Evening	.142
Perceived Safety- Late Night	.333***

*p=≤.05; **p=≤.01; ***p=≤.001

For the dependent variable, *perceived neighbourhood safety*, there was a moderate, positive relationship (tau b=.213, p≤.05) with those who feel unsafe while alone in the neighbourhood are more likely to disagree with the statement that the sidewalks were adequately lit (See Table 5.6).

Table 5.6: Cross-tabulation of Adequately Lit Sidewalks and Fear of Crime (Perceived Neighbourhood Safety)

Fear of Crime-	*Adequately Lit Sidewalks*			
Perceived Neighbourhood Safety	Agree		Disagree	
	(N)	%	(N)	%
Safe	46	78.0	25	58.1
Unsafe	13	22.0	18	41.9
Total	59	100.0	43	100.0

tau b=.213, p≤.05

A moderate, positive correlation between *adequately lit sidewalks* and *perceived crime rate* was also found (tau b=.355, p≤.000). As shown in Table 5.7, those who perceived the local crime rate as medium-high were more likely to disagree with statement that the sidewalks were adequately lit.

Table 5.7: Cross-tabulation of Adequately Lit Sidewalks and Fear of Crime (Perceived Crime Rate)

Fear of Crime-	*Adequately Lit Sidewalks*			
Perceived Crime Rate	Agree		Disagree	
	(N)	%	(N)	%
Low	30	50.8	7	16.3
Medium-High	29	49.2	36	83.7
Total	59	100.0	43	100.0

tau b=.355, p≤.000

Another statistically significant association was between *adequately lit sidewalks* variable and fear of crime variable *perceived safety late at night.* Those who perceived

the neighbourhood is unsafe late at night are more likely to disagree with the statement that the sidewalks are adequately lit (See Table 5.8).

Table 5.8: Cross-tabulation of Adequately Lit Sidewalks and Fear of Crime (Perceived Safety – Late Night)

Fear of Crime-	*Adequately Lit Sidewalks*			
Perceived Safety - Late Night	Agree		Disagree	
	(N)	%	(N)	%
Safe	21	35.6	3	7.0
Unsafe	38	64.4	40	93.0
Total	59	100.0	43	100.0

tau b=.333, p≤.001

5.1.3 Hypothesis 3 –

Older people who believe that there are not enough territorial cues (distinction between private and public space) in their physical environment exhibit higher fear of crime.

Positive associations are predicted between the CPTED concept of territoriality, as measured by the *distinction between private and public space* variable, and the five fear of crime measures. However, only three associations were statistically significant. *Distinction between private and public space* is shown to have a weak, positive relationship with *perceived safety in the evening* (tau b=.189, p≤.05) and moderate, positive associations were observed with *perceived crime rate* (tau b=.220, p≤.001) and *perceived safety late at night* (tau b=.266, p≤.01).

Table 5.9: Bivariate Analysis – CPTED Territoriality Variable

Fear of Crime	*Territoriality*
	Distinction between Public and Private Areas
	tau b
Perceived Neighbourhood Safety	.154
Perceived Crime Rate	.327***
Worry Scale	.149
Perceived Safety- Evening	.189*
Perceived Safety- Late Night	.266**

*p=≤.05; **p=≤.01; ***p=≤.001

First, for the independent variable, *distinction between public and private areas*, a statistically significant, moderate, positive association was found. Those who perceived the local crime rate as medium-high were more likely to disagree with the statement that there was enough distinction between different areas, tau b=.327, p≤.000.

Table 5.10: Cross-tabulation of Public/Private Distinction and Fear of Crime (Perceived Crime Rate)

Fear of Crime-	*Public/Private Distinction*			
Perceived Crime Rate	Agree		Disagree	
	(N)	%	(N)	%
Low	30	49.2	7	17.1
Medium-High	31	50.8	34	82.9
Total	61	100.0	41	100.0

tau b=.327, p≤.000

The cross-tabulation between the variable, *distinction between public and private areas,* and *perceived safety in the evening* was found to be statistically significant. A positive, weak association was found. Those who reported feeling unsafe in the evening were more likely to disagree with the statement that there was enough public and private space distinction, tau b=.189, p≤.05 (See Table 5.11).

Table 5.11: Cross-tabulation of Public/Private Distinction and Fear of Crime (Perceived Safety – Evening)

Fear of Crime-	*Public/Private Distinction*			
Perceived Safety – Evening	Agree		Disagree	
	(N)	%	(N)	%
Safe	21	35.6	3	7.0
Unsafe	38	64.4	40	93.0
Total	59	100.0	43	100.0

tau b=.189, p≤.05

Finally, a positive, moderate association was found for the variable *distinction between public and private spaces*. While the majority of people sampled agreed there was enough distinction between public and private spaces, there is a weak trend among those who disagreed with the statement that suggests they will also have a stronger likelihood of feeling unsafe late at night (see Table 5.12).

Table 5.12: Cross-tabulation of Public/Private Distinction and Fear of Crime (Perceived Safety – Late Night)

Fear of Crime-	*Public/Private Distinction*			
Perceived Safety – Late Night	Agree		Disagree	
	(N)	%	(N)	%
Safe	20	32.8	4	9.8
Unsafe	41	67.2	37	90.2
Total	61	100.0	41	100.0

tau b=.266, p≤.01

5.1.4 Hypothesis 4 –

Older people who believe that the surrounding area is poorly maintained (landscape conceals activity) exhibit higher fear of crime.

A positive association was predicted between the fear of crime variables and the CPTED maintenance measure (*landscape does not conceal activity*). Only one correlation was found to be statistically significant at the bivariate level – *perceived crime rate* (tau b =.274, p≤.01 (see Table 5.13).

Table 5.13: Bivariate Analysis –CPTED Maintenance Variable

Fear of Crime	*Maintenance*
	Landscaping does not conceal activity
	Tau B
Perceived Neighbourhood Safety	.166
Perceived Crime Rate	.274**
Worry Scale	.175
Perceived Safety- Evening	.070
Perceived Safety- Late Night	.147

*p=≤.05; **p=≤.01; ***p=≤.001

A moderate, positive association that was of statistical significance was reached for the variable *landscaping does not conceal.* Those who perceived the local crime rate as medium-high were more likely to disagree with the statement that landscaping does not conceal activity (see Table 5.14).

Table 5.14: Cross-tabulation of Landscaping does not conceal and Fear of Crime (Perceived Crime Rate)

Fear of Crime-	*Landscaping does not conceal*			
Perceived Crime Rate	Agree		Disagree	
	(N)	%	(N)	%
Low	31	45.6	6	17.6
Medium-High	37	54.4	28	82.4
Total	68	100.0	34	100.0

tau b=.274, p≤.01

5.1.5 Hypothesis 5 –

Negative report of the presence of undesirable behaviours/activities will be associated with fear of crime among the research subjects.

As shown in Table 5.15, several statistically significant relationships were found between the independent variable, *presence of undesirable behaviours/activities,* and all of the dependent variables: *perceived neighbourhood safety* (tau c=.368, p=≤.001); *crime*

rate (tau c=.338, p=≤.001); *worry scale* (tau c=.254, p=≤.01); *perceived safety in evening* (tau c=.215, p=≤.05); and *perceived safety late at night* (tau c=.205, p=≤.05).

Table 5.15: Bivariate Analysis – Neighbourhood Context Variable

Fear of Crime	*Neighbourhood Context*
	Presence of Undesirable Behaviours/Activities
	Tau b
Perceived Neighbourhood Safety	.368***
Perceived Crime Rate	.338***
Worry Scale	.254**
Perceived Safety- Evening	.215*
Perceived Safety- Late Night	.204*

*p=≤.05; **p=≤.01; ***p=≤.001

There is a statistically significant moderate relationship between *presence of undesirable behaviours/activities* and *perceived neighbourhood safety (*tau c=.368, p=≤.001). As expected, people who noted feeling that the neighbourhood is generally unsafe have an increased tendency to report seeing undesirable behaviours occur regularly, whereas those who feel that the neighbourhood safe appear more inclined to report never or infrequently see undesirable behaviours (see Table 5.16).

Table 5.16: Cross-tabulation of Presence of Undesirable Behaviours/Activities and Fear of Crime (Perceived Neighbourhood Safety)

Fear of Crime	*Presence of Undesirable Behaviours/Activities*			
Perceived Neighbourhood Safety	Never-Infrequently		Regularly	
	(N)	%	(N)	%
Safe	37	90.2	34	55.7
Unsafe	4	9.8	27	44.3
Total	41	100.0	61	100.0

tau c=.368, p=≤.001

A positive, moderate association was observed between the *presence of undesirable behaviours/activities* and fear of crime variable as measured by *perceived crime rate*. Among those who report that the neighbourhood crime rate is medium to high, there is a greater likelihood of reporting they frequently observe undesirable behaviours occurring in the neighbourhood (see Table 5.17).

Table 5.17: Cross-tabulation of Presence of Undesirable Behaviours/Activities and Fear of Crime (Perceived Crime Rate)

Fear of Crime	*Presence of Undesirable Behaviours/Activities*			
Perceived Crime Rate	Never-Infrequently		Regularly	
	(N)	%	(N)	%
Low	23	56.1	14	33.0
Medium-High	18	43.9	47	77.0
Total	41	100.0	61	100.0

tau c=.338, p=≤.001

The cross-tabulation of *presence of undesirable behaviours/activities* and the *worry scale* was found to be statistically significant (tau c=.254, p=≤.01). People who are worried about crime are more likely to report the occurrence of undesirable behaviours as frequent (see Table 5.18).

Table 5.18: Cross-tabulation of Presence of Undesirable Behaviours/Activities and Fear of Crime (Worry Scale)

Fear of Crime	*Presence of Undesirable Behaviours/Activities*			
Worry Scale	Never-Infrequently		Regularly	
	(N)	%	(N)	%
Less Worried	38	92.7	44	72.1
More Worried	3	7.3	17	27.9
Total	41	100.0	61	100.0

tau b=.254, p=≤.01

In the cross-tabulation between *presence of undesirable behaviours/activities* and *perceived safety in the evening* (see Table 5.19), respondents who perceived the

neighbourhood as unsafe in the evening were more likely to report frequent sightings of undesirable behaviours occurring within the neighbourhood.

Table 5.19: Cross-tabulation of Presence of Undesirable Behaviours/Activities and Fear of Crime (Worry Scale)

Fear of Crime	*Presence of Undesirable Behaviours/Activities*			
Worry Scale	Never-Infrequently		Regularly	
	(N)	%	(N)	%
Safe	23	56.1	21	34.4
Unsafe	18	43.9	40	65.6
Total	41	100.0	61	100.0

tau b=.215, p=≤.05

Finally, for the last dependent variable, *perceived safety late at night*, there was a positive, moderate relationship observed with *presence of undesirable behaviours/activities* (see Table 5.20).

Table 5.20: Cross-tabulation of Presence of Undesirable Behaviours/Activities and Fear of Crime (Worry Scale)

Fear of Crime	*Presence of Undesirable Behaviours/Activities*			
Perceived Safety-Late Night	Never-Infrequently		Regularly	
	(N)	%	(N)	%
Safe	14	34.1	10	16.4
Unsafe	27	65.9	51	83.6
Total	41	100.0	61	100.0

tau b=.205, p=≤.05

5.1.6 Hypothesis 6 -

There will be a positive relationship between socio-demographic variables with fear of crime.

To test this hypothesis, four independent variables were included in the analysis: *age, sex, level of education and length at residence.* As shown in Table 5.21, only two statistically significant associations are shown between *sex* and the five fear of crime

variables at the bivariate level. A moderate association (tau b=.265, p=≤.01) between *perceived neighbourhood safety* and *sex* was found, whereby females were more likely than males to perceive an unsafe neighbourhood.

Table 5.21: Bivariate Analysis – Socio Demographic Variables

Fear of Crime	Socio-Demographic			
	Age	**Sex**	**Level of Education**	**Length at Residence**
	tau c	*tau b*	*tau c*	*tau b*
Perceived Neighbourhood Safety	-.145	.265**	.160	.014
Perceived Crime Rate	.043	.211*	-.133	.095
Worry Scale	-.108	.152	.116	-.009
Perceived Safety- Evening	.105	.061	-.013	.016
Perceived Safety –Late Night	.064	.122	-.037	-.066

*p=≤.05; **p=≤.01; ***p=≤.001

A moderate association (tau b=.265, p=≤.01) between *perceived neighbourhood safety* and *sex* was found, whereby females were more likely than males to perceive an unsafe neighbourhood.

Table 5.22: Cross-tabulation of Sex and Fear of Crime (Perceived Neighbourhood Safety)

Fear of Crime-	*Sex*			
Perceived Neighbourhood Safety	Males		Females	
	(N)	%	(N)	%
Safe	31	86.1	40	60.6
Unsafe	5	13.9	26	39.4
Total	36	100.0	66	100

tau b=.265, p=≤.01

The only other statistically significant correlation investigating the socio-demographic variables was between *sex* and *perceived crime rate.* A positive, moderate relationship was observed in the cross-tabulation between these two variables, where those who perceive the crime rate as medium-high are more likely to be females than males (tau b=.211, p≤.05).

Table 5.23: Cross-tabulation of Sex and Fear of Crime (Perceived Crime Rate)

Fear of Crime-	*Sex*			
Perceived Crime Rate	Males		Females	
	(N)	%	(N)	%
Low	18	50.0	19	28.8
Medium-High	18	50.0	47	71.2
Total	36	100.0	66	100

tau b=.211, p=≤.05

5.1.7 Hypothesis 7 -

There will be a positive relationship between fear of crime and history of victimization.

For the independent variable, *history of victimization*, a statistically significant moderate, positive relationship was uncovered with *perceived neighbourhood safety* (r=.443, p<.001). Weak, positive associations with previous victimization was also found for the *worry scale* (tau b=.190, p=≤.05) and *perceived safety in the evening* (tau b=.216, p=≤.05).

Table 5.24: Bivariate Analysis – Previous Victimization

Fear of Crime	Previous Victimization
	tau b
Perceived Neighbourhood Safety	.443***
Perceived Crime Rate	.028
Worry Scale	.190*
Perceived Safety- Evening	.216*
Perceived Safety –Late Night	.120

*p=≤.05; **p=≤.01; ***p=≤.001

Among those who have a fear of crime, as captured by the concept of *perceived neighbourhood safety,* there is a greater likelihood of reporting a having been a victim of crime. The full table is shown below (see Table 5.25).

Table 5.25: Cross-tabulation of History of Victimization and Perceived Neighbourhood Safety

Fear of Crime	*Victim of Crime*			
Perceived Neighbourhood Safety	No		Yes	
	(N)	%	(N)	%
Safe	50	87.7	21	46.7
Unsafe	7	12.3	24	53.3
Total	57	100.0	45	100.0

tau b=.443, p<.001

The cross-tabulation (Table 5.26) indicates that among those who report being worried about crime, respondents are more likely to have been previously victimized compared to those who have not.

Table 5.26: Cross-tabulation of History of Victimization and Worry Scale

Fear of Crime	*Victim of Crime*			
Worry Scale	No		Yes	
	(N)	%	(N)	%
Not worried	15	26.3	5	11.1
Worried	42	73.7	40	88.9
Total	57	100.0	45	100.0

tau b=.190, p<.05

Finally, for the dependent variable of *perceived safety in the evening*, those who report feeling unsafe while alone in their neighbourhood during the evening are more likely to have been a victim of crime compared to those who have not.

Table 5.27: Cross-tabulation of History of Victimization and Perceived Safety – Evening

Fear of Crime	*Victim of Crime*			
Perceived Safety – Evening	No		Yes	
	(N)	%	(N)	%
Safe	30	52.6	14	31.1
Unsafe	27	47.4	31	68.9
Total	57	100.0	45	100.0

tau b=.216, p<.05

5.1.8 Hypothesis 8 -

Older people with fewer personal resources, such as the lack of opportunity to meet friends and family, having more than one chronic condition, and those who have not done anything proactive to increase their sense of security, will report a higher fear of crime.

As Table 5.28 indicates, a statistically significant association was found for two of the personal resource variables: *number of chronic conditions* with *perceived neighbourhood safety* (tau c=.265, p≤.01), *number of chronic conditions* with the *worry scale* (tau c=.175, p=≤.05), and the *action scale* with the *worry scale* (tau c=.258, p≤.01).

Table 5.28: Bivariate Analysis – Personal Resource Variables

Fear of Crime	Personal Resources			
	Visits with Family and/or Friends	**Number of Chronic Conditions**	**Walk without Aids**	**Action Scale**
	tau B	*tau C*	*tau B*	*tau C*
Perceived Neighbourhood Safety	-.145	.265**	.160	.014
Perceived Crime Rate	.028	.229*	.173	.269**
Worry Scale	.059	.175*	.055	.258**
Perceived Safety-Evening	.105	.061	-.013	.016
Perceived Safety – Late Night	.064	.122	-.037	-.066

*p=≤.05; **p=≤.01; ***p=≤.001

For the independent variable, *number of chronic conditions*, there was a weak, positive relationship (tau c=.265, p≤.01)with those who indicated they felt unsafe alone in their neighbourhood are more likely to also report having a greater number of chronic conditions (see Table 5.29).

Table 5.29: Cross-tabulation of Chronic Conditions and Fear of Crime (Perceived Neighbourhood Safety)

Fear of Crime	*# of Chronic Conditions*					
Perceived Neighbourhood Safety	None		One-Two		Three or more	
	(N)	%	(N)	%	(N)	%
Safe	17	81.0	21	67.7	30	65.2
Unsafe	4	19.0	10	32.3	16	34.8
Total	21	100.0	31	100.0	46	100.0

tau c=.265, p=≤.01

Secondly, the relationship between the *number of chronic conditions* and *perceived crime rate* was found to be statistically significant (tau c=.229, p≤.05),

whereby those who perceived the crime rate as medium-high are more likely to have a greater number of chronic conditions (see Table 5.30).

Table 5.30: Cross-tabulation of Chronic Conditions and Fear of Crime (Perceived Crime Rate)

Fear of Crime	*# of Chronic Conditions*					
Perceived Crime Rate	None		One-Two		Three or more	
	(N)	%	(N)	%	(N)	%
Low	10	45.5	16	48.5	11	23.4
Medium-High	12	54.5	17	57.5	36	76.6
Total	22	100.0	33	100.0	47	100.0

tau c=.229, p=≤.05

Thirdly, the cross-tabulation between the *number of chronic conditions* and the *worry scale* was found to be statistically significant. A positive, weak association was found. Those who reported being worried about crime were more likely to have a greater number of chronic conditions (tau c=.175, p≤.05) (See Table 5.31).

Table 5.31: Cross-tabulation of Chronic Conditions and Fear of Crime (Worry Scale)

Fear of Crime	*# of Chronic Conditions*					
Worry Scale	None		One-Two		Three or more	
	(N)	%	(N)	%	(N)	%
Not worried	5	22.7	11	33.3	4	8.5
Worried	17	77.3	22	66.7	43	91.5
Total	22	100.0	33	100.0	47	100.0

tau c=.175, p=≤.05

The only other independent variable that produced statistically significant associations was the *action scale.* In the cross-tabulation between *perceived crime rate* and the *action scale* a moderate, positive relationship was observed between the two variables (tau c=.269, p≤.01), whereby the respondents who perceived the crime rate as

medium-high are more likely to have taken more proactive steps to feel secure (Table 5.32).

Table 5.32: Cross-tabulation of Action Scale and Fear of Crime (Perceived Crime Rate)

Fear of Crime	*Action Scale*					
Perceived Crime Rate	None		Some		More	
	(N)	%	(N)	%	(N)	%
Low	11	61.1	19	36.5	7	21.9
Medium-High	7	38.9	33	63.5	25	78.1
Total	18	100.0	52	100.0	32	100.0

tau c=.269, p=≤.01

Finally, the association between the *action scale* and *worry scale* was found to be statistically significant (tau c=.258, p≤.01). Those who reported being worried about crime were more likely to do things to make themselves feel secure than do nothing (see Table 5.33).

Table 5.33: Cross-tabulation of Action Scale and Fear of Crime (Worry Scale)

Fear of Crime	*Action Scale*					
Perceived Neighbourhood Safety	None		Some		More	
	(N)	%	(N)	%	(N)	%
Not worried	8	44.4	10	19.2	2	6.3
Worried	10	55.6	42	80.8	30	93.8
Total	18	100.0	31	100.0	32	100.0

tau c=.258, p=≤.01

5.2 Summary of Bivariate Results

In the investigation of the five fear of crime dependent variables, fourteen independent factors were analyzed, and many of the associations were statistically significant. Factors significant at the bivariate level of analysis were: the natural access control, natural surveillance, and territoriality variables, presence of undesirable behaviours, and history of victimization. Examples of factors that were not significant on bivariate analysis included: the maintenance variable, some of the personal resource variables and most of the socio-demographic variables. Further elaboration of these relationships requires a different level of analysis –multivariate.

5.3 Multivariate Analysis

To further understand the results and test the hypotheses, a multivariate analysis was conducted using logistic regression, a method commonly when there are dichotomous dependent variables. Logistic regression analysis allows for the examination of the predictive abilities of each independent variable separately, as well as for sets or blocks of independent variables, while controlling for the effects of others.

There are several important statistics generated by logistic regression analysis and these will be used in the presentation of findings. The model and block chi-square and their level of significance, the beta coefficient and its standard error and the odds ratio will all be utilized in describing the effects of each explanatory variable. The model and block chi-squares represent tests of significance that compare the observed and expected frequencies. The beta coefficient (B) represents the change in log odds in the dependent variable for a one-unit change in an independent variable, while statistically controlling for all others (DeMaris, 1995). These can be converted into odds ratios by taking the expodential of Beta (expB). The odds ratio is the estimated odds for those who are a unit apart on a given explanatory variable, after controlling for all other predictors in the model (DeMaris, 1995). An odds ratio ranging between 1 to infinity indicates a positive relationship, whereas a negative or inverse relationship occurs when the odds ratio ranges between 0 and 1.

In this exploratory study, the relationship between fear of crime and various environmental variables is investigated. All five dependent variables used in the investigations are dichotomous when utilized in the logistic regression analysis; however,

all were recoded from their original forms in order to maximize the number of cases in each category. The dependent variable, *perceived neighbourhood safety,* was recoded from the original four-response category into two (0=safe, 1=unsafe). The second dependent variable, *perceived crime rate*, was recoded from a three-response category into two (low=0, medium-to-high=1) based again on the need to avoid having too small a number of cases within each category. The missing cases (n=3) were recoded into the modal category "medium-to-high" (n=65, 63.7%). The *worry scale* dependent variable was created from a series of related questions that asked specifically about different threats and required respondents to indicate their level of worry. Missing cases were assigned to modal category for each question and then a new variable the worry scale was developed by adding all the responses together. A final recode took place, where the worry scale represented those who were 'not worried' = 0 and those who were 'worried'=1. The fourth and fifth dependent variables, *perceived safety in the evening* and *perceived safety late at night*, were recoded from a four response question into dichotomous variables where 0=safe and 1= unsafe.

None of the correlates examined in the bivariate section were excluded from the multivariate analysis, since they are deemed important and may be predictors in the multivariate model. Thus, there were 14 independent variables utilized and these were grouped into four blocks: Model 1 included the four socio-demographic variables; Model 2 added the four personal resource variables. Model 3 added five neighbourhood context variables. Finally, Model 4 added one variable representing previous victimization to the other thirteen variables in Model 3. The ordering of these blocks is based upon their causal influence or antecedent nature, for instance, the length of time living at Sunset

effects how individual residents interpret the surrounding neighbourhood, not the other way around

To explore the relationships among the fear of crime variables and the other independent ones, four hierarchical models were developed and tested (see Table 5.34). To examine the correlates of fear of crime in this sample of older adults, three of the independent variables (*age, length at residence* and *number of chronic conditions*) were utilized in interval form. For *age* and *length at residence* the small number of missing cases (age, n=2 and length at residence, n=1) were recoded into the mean - age, mean=58 and length at residence, mean=8. All other variables were used as described previously in chapter 3.

Finally, as there are five dependent variables to investigate, each will be presented separately. Each presentation will include summary tables that illustrate the direction and strength of all associations for each independent variable as well as the model chi-square and statistical significance of each block and each model.

Table 5.34: Logistic Regression: Hierarchical Model

Block 1 **Socio-Demographic**	Block 2 **Personal Resources**	Block 3 **Neighbourhood Context**	Block 4 **Victimization**
1. Age - 55 to 92 2. Sex - Male* - Female 3. Level of Education - None to some schooling* - High School Graduation - Post-Secondary 4. Length at Residence - ½ year to 26 years	1. Visiting Family and Friends - Less than once a week* - Once a week or more 2. Number of Chronic Conditions - None to Seven 3. Walk without Aids - Yes* - No 4. Action Scale - No Action* - Some Action - More Action	1.Presence of Undesirable Behaviours - Never-Infrequently Seen* - Regularly Seen 2. Natural Access Control - Adequate Fencing - Agree* - Disagree 3. Natural Surveillance – Adequately lit Sidewalks - Agree* - Disagree 4. Territoriality – Distinction between private and public spaces - Agree* - Disagree 5. Maintenance – Landscape conceals activity - Agree* - Disagree	1. Victim of Crime - No* - Yes

*Indicates reference category selected for nominal and ordinal variables.

5.3.1 Fear of Crime – Perceived Neighbourhood Safety

Table 5.35 presents the block and model chi-squares and the associated statistical significances produced from the analysis of the *perceived neighbourhood safety* variable.

Table 5.35: Logistic Regression Summary Table for Neighbourhood Safety

	Block Chi-Square	Block Significance	Model Chi-Square	Model Significance
Model 1	13.571	.019	13.571	.019
Model 2	4.413	ns	17.984	ns
Model 3	21.331	.001	39.315	.001
Model 4	14.590	.000	53.905	.000

In Model 1, the only socio-demographic variable that produced a statistically significant association was *sex* (Table 5.36). The odds of feeling unsafe were increased by a factor of 4.37 times for females compared to males (B=1.475, p<.05, OR=4.37). In the next model, when the personal resource variables were added, both the block and model were no longer statistically significant. In the third model, however, both the block and model became statistically significant. Support was found for sex, number of chronic conditions, and *neighbourhood scale.* The sex variable resulted in a similar odds ratio to Model 1, with the likelihood of feeling unsafe increased by a factor of 4.95 times for females compared to males (B=1.276, p<.001, OR=4.95). When the neighbourhood context variables were included, a personal resource variable, *number of chronic conditions*, became statistically significant. The odds of feeling unsafe in the neighbourhood were increased by a factor of 1.44 for every unit increase in number of chronic conditions (B=.362, p<.001, OR=1.44). Finally, the only neighbourhood context variable that produced a statistically significant association was the *neighbourhood scale,* whereby the likelihood of feeling the neighbourhood is unsafe (compared to feeling that

it is safe) is increased by a factor of 25.91 for those who regularly observe undesirable behaviours occurring in the neighbourhood than those who observe these behaviours only occasionally or not at all (B=3.255, p<.001, OR=25.91).

The last hierarchical block added a victimization variable. One of the previously significant variables, *the number of chronic conditions*, failed to reach statistical significance in the final model. Nonetheless, both *sex* and the *neighbourhood scale* remained statistically significant. For *sex*, the odds ratio doubled from the previous models, where the probability of feeling unsafe in the neighbourhood is increased by a factor of 8.08 for those are female than those who are male (B=2.090, p<.001, OR=8.08). For the *neighbourhood scale*, the odds ratio indicates that the odds of feeling unsafe (compared to safe) in the neighbourhood is increased by 18.52 for those who frequently observe undesirable activities in their neighbourhood than for those observe these behaviours only occasionally or not at all (B=2.919, p<.001, OR=18.52). Finally, for *previous victimization*, the likelihood of feeling unsafe while alone in the neighbourhood is increased by a factor of 12.90 for those respondents who identified themselves as a victim of crime compared to those who had not, controlling for all other variables in the equation (B=2.557, p<.001, OR=12.90).

Table 5.36: Logistic Regression – Neighbourhood Safety

	BLOCK 1			BLOCK 2			BLOCK 3			BLOCK 4		
Model Chi-Square	X^2=13.571, DF=5*			X^2=17.984, DF=10			X^2=39.315, DF=15***			X^2=53.905, DF=16***		
	B	**S.E**	**O.R.**	**B**	**S.E.**	**O.R.**	**B**	**S.E**	**O.R.**	**B**	**S.E.**	**O.R.**
Age	-.046	.03	-----	-.074	.04	-----	-.031	.05	-----	-.021	.05	-----
Sex	1.475	.56	4.37	1.276	.60	-----	1.599	.70	4.95	2.090	.81	8.08
Level of Education												
None to Some Schooling						-----			-----			-----
High School Graduation	-.894	.53	-----	-.996	.58	-----	-1.061	.66	-----	-.541	.76	-----
Post-Secondary	-.830	.69	-----	-.850	.71	-----	-.502	.80	-----	.328	.91	-----
Length at Residence	.050	.05	-----	.050	.05	-----	.055	.06	-----	.077	.06	-----
Visiting Family and Friends				.271	.52	-----	.761	.66	-----	.860	.75	-----
Number of Chronic Conditions				.206	.15	-----	.362	.18	1.44	.317	.20	-----
Walk without Aids				.384	.56	-----	-.225	.64	-----	-.093	.71	-----
Action Scale												
No Action						-----			-----			-----
Some Action				-.505	.86	-----	-.550	1.06	-----	-.298	1.20	-----
More Action				-.424	.57	-----	-.799	.68	-----	-1.084	.78	-----
Neigh Scale							3.255	.96	25.91	2.919	1.12	18.53
Natural Access Control – Adequate Fencing							.030	.62	-----	.120	.71	-----
Natural Surveillance – Adequately Lit							1.152	.69	-----	1.680	.87	-----
Territoriality – Private/Public Distinction							-.298	.62	-----	-.315	.73	-----
Maintenance – Landscape Concealment							-.490	.65	-----	-.553	.75	-----
Previous Victimization										2.557	.75	12.90

5.3.2 Fear of Crime – Perceived Crime Rate

Table 5.37 presents the block and model chi-squares and the associated statistical significances produced from the analysis of the *perceived crime rate* variable.

Table 5.37: Logistic Regression Summary Table for Perceived Crime Rate

	Block Chi-Square	Block Significance	Model Chi-Square	Model Significance
Model 1	8.452	ns	8.452	ns
Model 2	4.927	ns	13.379	ns
Model 3	32.583	.000	45.961	.000
Model 4	2.287	.130	48.249	.000

The analysis with perceived crime rate as the dependent variable resulted in two statistically significant hierarchical models - number three and four (see Table 5.37). Block 1 and 2 were not statistically significant. When the neighbourhood context variables were included in Model 3, two statistically significant relationships were found – *sex* and *neighbourhood scale*. The odds of perceiving the crime rate as 'medium-to-high' is increased by a factor of 3.88 for those who are female than those who are male (B=1.355, p<.001, OR=3.88). In terms of neighbourhood context, the model provided limited support for predicting fear of crime as only one variable, *neighbourhood scale*, appeared statistically significant. The odds of perceiving the local crime rate as medium-high (compared to low) are increased by a factor of 5.72 for those who frequently observe undesirable behaviours occurring in the neighbourhood than for those who infrequently or never see things (B=1.744, p<.001, OR=5.72). In the final model involving the dependent variable *perceived crime rate*, the same two variables as described earlier resulted in a statistically significant relationship. Support was again found for *sex*, where the odds ratio was quite similar to the previous model. The odds of perceiving the crime

rate as 'medium-to-high' were increased by factor of 3.8 for females than for males(B=1.399, p<.05, OR=3.82). Finally, for *neighbourhood scale*, the odds ratio doubled from the previous model, the odds of perceiving the local crime rate as 'medium-to-high' is increased by a factor of 10.11 for those who frequently observe undesirable behaviours occurring in the neighbourhood than for those who infrequently or never see things (B=2.314, p<.05, OR=10.11).

Table 5.38: Logistic Regression – Perceived Crime Rate

	BLOCK 1			BLOCK 2			BLOCK 3			BLOCK 4		
Model Chi-Square	X^2=8.452, df=5			X^2=13.379, df=10			X^2=45.961, df=15***			X^2=48.249, df=16***		
	B	S.E.	O.R.	B	S.E.	O.R.	B	S.E.	O.R.	B	S.E.	O.R.
Age	.036	.03	-----	.008	.04	-----	.056	.04	-----	.061	.04	-----
Sex	.932	.44	2.54	.586	.48	-----	1.355	.65	3.88	1.339	.66	3.82
Level of Education												
None to Some Schooling						-----			-----			-----
High School Graduation	.622	.50	-----	.589	.53	-----	1.235	.65	-----	1.094	.67	-----
Post-Secondary	-.150	.59	-----	-.078	.61	-----	.381	.75	-----	.199	.79	-----
Length at Residence	-.044	.05	-----	-.043	.05	-----	-.036	.06	-----	-.052	.06	-----
Visiting Family and Friends				.013	.48	-----	-.273	.65	-----	-.116	.65	-----
Number of Chronic Conditions				.087	.14	-----	.115	.17	-----	.178	.19	-----
Walk without Aids				.456	.54	-----	-.235	.71	-----	-.483	.74	-----
Action Scale												
No Action						-----			-----			-----
Some Action				-1.210	.76	-----	-.679	.99	-----	-.870	1.02	-----
More Action				-.532	.57	-----	-.550	.69	-----	-.588	.69	-----
Neigh Scale							1.744	.69	5.72	2.314	.84	10.11
Natural Access Control – Adequate Fencing							.853	.67	-----	.935	.69	-----
Natural Surveillance – Adequately Lit							1.035	.64	-----	1.031	.65	-----
Territoriality – Private/Public Distinction							1.011	.63	-----	.897	.63	-----
Maintenance – Landscape Concealment							.681	.75	-----	.628	.75	-----
Previous Victimization										-1.012	.69	-----

5.3.3 Fear of Crime – Worry Scale

Table 5.39 presents the block and model chi-squares and the associated statistical significances produced from the analysis of the *worry scale* variable.

Table 5.39: Logistic Regression Summary Table for Worry Scale

	Block Chi-Square	Block Significance	Model Chi-Square	Model Significance
Model 1	17.724	.003	17.724	.003
Model 2	3.403	ns	21.127	.020
Model 3	5.262	ns	26.389	.034
Model 4	.523	ns	26.912	.042

Only Model 1 with the socio-demographic variables reached statistical significance. An inverse association between the *worry scale* and *age* is supported (Table 5.40). The odds of being more worried are decreased by a factor of .89 for each succeeding age category, controlling for all other variables in the equation (B=-.117, $p<.01$, OR=.89). For sex, the likelihood of being more worried compared to being less worried is increased by a factor of 4.51 for females than for males (B=1.51, $p<.01$, OR=4.51). In Models 2, 3 and 4, the blocks were not statistically significant while the overall models were.

Table 5.40: Logistic Regression – Worry Scale

	BLOCK 1			BLOCK 2			BLOCK 3			BLOCK 4		
Model Chi-Square	X^2=17.724, DF=5**			X^2=21.127, DF=10*			X^2=26.389, DF=15*			X^2=26.912, DF=16*		
	B	**S.E.**	**O.R.**	**B**	**S.E.**	**O.R.**	B	**S.E.**	**O.R.**	**B**	**S.E.**	**O.R.**
Age	-.117	.05	.89	-.138	.06	.87	-.133	.06	.88	-.140	.06	.87
Sex	1.51	.72	4.51	1.433	.77	-----	1.604	.80	4.97	1.623	.80	5.07
Level of Education												
None to Some Schooling			-----			-----			-----			-----
High School Graduation	-.742	.63	-----	-.977	.69	-----	-.758	.73	-----	-.999	.82	-----
Post-Secondary	-1.843	1.16	-----	-2.016	1.19	-----	-1.838	1.22	-----	-2.047	1.26	-----
Length at Residence	.057	.07	-----	.049	.07	-----	.062	.07	-----	.059	.07	-----
Visiting Family and Friends				.539	.62	-----	.607	.70	-----	.634	.70	-----
Number of Chronic Conditions				-.029	.18	-----	-.016	.21	-----	-.003	.21	-----
Walk without Aids				.872	.67	-----	.669	.73	-----	.620	.73	-----
Action Scale												
No Action						-----			-----			-----
Some Action				-.427	1.00	-----	-.240	1.10	-----	-.374	1.12	-----
More Action				-.344	.70	-----	-.281	.79	-----	-.334	.79	-----
Neigh Scale							1.147	.85	-----	1.427	.94	-----
Natural Access Control – Adequate Fencing							.328	.69	-----	.332	.69	-----
Natural Surveillance – Adequately Lit							-.429	.77	-----	-.426	.76	-----
Territoriality – Private/Public Distinction							.564	.70	-----	.541	.70	-----
Maintenance – Landscape Concealment							.160	.73	-----	.089	.75	-----
Previous Victimization										-.532	.74	-----

5.3.4 Fear of Crime – Perceived Safety in Evening

Table 5.41 presents the block and model chi-squares and the associated statistical significances produced from the analysis of the *perceived safety in the evening* variable.

Table 5.41: Logistic Regression Summary Table for Perceived Safety in the Evening

	Block Chi-Square	Block Significance	Model Chi-Square	Model Significance
Model 1	6.284	ns	6.284	Ns
Model 2	17.403	.004	23.687	.008
Model 3	7.645	ns	31.332	.008
Model 4	3.435	ns	34.767	.004

Interestingly, for the analysis involving the *perceived safety in the evening*, very few statistically significant statistics were observed (see Table 5.42). Only in Model 2, where the personal resource variables were included, did part of one variable reach statistical significance. An inverse association was observed between those who take some action and perceived safety in the evening. The odds of feeling unsafe in the evening are decreased by a factor of .06 for respondents who took some action than for those who took none ($B=-2.803$, $p<.01$, $OR=.06$). The more action compared to no action contrast was not supported.

Table 5.42: Logistic Regression – Perceived Safety in the Evening

	BLOCK 1			BLOCK 2			BLOCK 3			BLOCK 4		
Model Chi-Square	**X^2=6.284, df=5**			**X^2=23.687, df=10****			**X^2=31.332, df=15****			**X^2=34.767, df=16***		
	B	**S.E.**	**O.R.**	**B**	**S.E.**	**O.R.**	**B**	**S.E.**	**O.R.**	**B**	**S.E.**	**O.R.**
Age	.041	.03	-----	-.005	.03	-----	.015	.04	-----	.012	.04	-----
Sex	.236	.43	-----	-.618	.55	-----	-.416	.58	-----	-.449	.59	-----
Level of Education												
None to Some Schooling			-----			-----			-----			-----
High School Graduation	.007	.47	-----	-.135	.53	-----	.024	.56	-----	.284	.59	-----
Post-Secondary	-.987	.59	-----	-1.017	.64	-----	-.908	.68	-----	-.646	.69	-----
Length at Residence	.001	.04	-----	.002	.05	-----	.006	.05	-----	.020	.05	-----
Visiting Family and Friends				.233	.50	-----	.374	.55	-----	.284	.57	-----
Number of Chronic Conditions				.140	.15	-----	.169	.16	-----	.131	.17	-----
Walk without Aids				.524	.55	-----	.143	.59	-----	.313	.60	-----
Action Scale												
No Action						-----						
Some Action				-2.814	.89	.06	-2.803	.98	.06	-2.828	1.00	.06
More Action				-.746	.56	-----	-.657	.59	-----	-.717	.60	-----
Neigh Scale							1.221	.64	-----	.815	.67	-----
Natural Access Control – Adequate Fencing							.790	.58	-----	.856	.59	-----
Natural Surveillance – Adequately Lit							-.078	.58	-----	-.059	.58	-----
Territoriality – Private/Public Distinction							.059	.56	-----	.178	.58	-----
Maintenance – Landscape Concealment												
Previous Victimization										-.532	.74	-----

5.3.5 Fear of Crime – Perceived Safety Late at Night

Table 5.43 presents the block and model chi-squares and the associated statistical significances produced from the analysis of the *perceived safety late at night.*

Table 5.43: Logistic Regression Summary Table for Perceived Safety – Late at Night

	Block Chi-Square	Block Significance	Model Chi-Square	Model Significance
Model 1	2.183	ns	2.183	ns
Model 2	21.175	.001	23.358	.010
Model 3	10.752	.05	34.110	.003
Model 4	.773	ns	34.883	.004

As Table 5.44 indicates, once adjusted for other factors, neither the socio-demographic, nor the personal resource nor the neighbourhood context nor the history of victimization categories had a significant impact. A minor exception was observed within the variable *action scale.* With respect to those who take some action, an inverse association was revealed. The likelihood of feeling unsafe late at night is decreased by a factor of .05 for persons reporting then took some action compared to none (B=-3.332, $p<.001$, OR=.04). The more action compared to no action contrast was not supported. The effect remained significant once neighbourhood context was included (Model 3), however, it disappeared again when final block was added to analyze predictors of fear of crime.

Table 5.44: Logistic Regression – Perceived Safety Late at Night

	BLOCK 1			BLOCK 2			BLOCK 3			BLOCK 4		
Model Chi-Square	**X^2=2.183, df=5**			**X^2=23.358, df=10****			**X^2=34.110, df=15****			**X^2=34.883, df=17****		
	B	**S.E.**	**O.R.**	**B**	**S.E.**	**O.R.**	B	**S.E.**	**O.R.**	**B**	**S.E.**	**O.R.**
Age	.019	.03	-----	-.031	.04	-----	-.077	.05	-----	-.007	.05	-----
Sex	.584	.48	-----	-.378	.61	-----	-.146	.67	-----	-.125	.68	-----
Level of Education												
None to Some Schooling			-----			-----						
High School Graduation	.190	.55	-----	-.008	.65	-----	.295	.70	-----	.416	.71	-----
Post-Secondary	-.184	.64	-----	-.195	.71	-----	.307	.81	-----	.401	.81	-----
Length at Residence	-.018	.05	-----	-.029	.06	-----	-.030	.06	-----	-.026	.07	-----
Visiting Family and Friends				1.039	.59	-----	.953	.67	-----	1.001	.70	-----
Number of Chronic Conditions				.241	.18	-----	.180	.20	-----	.156	.20	-----
Walk without Aids				-.165	.70	-----	-.470	.82	-----	-.403	.81	-----
Action Scale												
No Action												
Some Action				-3.332	1.03	.04	-3.079	1.12	.05	-3.066	1.13	.05
More Action				-.766	.78	-----	-.665	.83	-----	-.598	.84	-----
Neigh Scale							.990	.76	-----	.814	.79	-----
Natural Access Control – Adequate Fencing							.259	.75	-----	.268	.75	-----
Natural Surveillance – Adequately Lit							1.249	.81	-----	1.260	.80	-----
Territoriality – Private/Public Distinction							.645	.73	-----	.759	.75	-----
Maintenance – Landscape Concealment							.105	.79	-----	.094	.81	-----
Previous Victimization										.588	.68	-----

5.4 Summary of Multivariate Results

The idea behind logistic regression analysis is to show how the significance of variables associated with fear of crime change when they are put in multivariate models with each other and how it changes when the other factors are controlled for. The results from this study's multivariate analyses did not substantiate the findings from the bivariate level for many of the factors associated with individual fear of crime variables failed to reach statistical significance.

Overall, statistically significant associations between the five dependent and fourteen independent variables were limited and thus reveal very little support for the eight proposed hypotheses. The findings are summarized as follows:

Hypothesis 1- Older people who believe that there is not enough natural access control (inadequate fencing) in their physical environment exhibit higher fear of crime.

Logistic regression analyses did not confirm that respondents who report that fencing is inadequate are significantly more likely to report a fear of crime. When controlling for all other covariates, multivariate analysis did not result in statistically significant associations with any of the dependent variables.

Hypothesis 2 – Older people who believe that there are not enough natural surveillance opportunities (sidewalks are inadequately lit)in their physical environment exhibit higher fear of crime.

The natural surveillance variable - *adequately lit sidewalks* - did not exert any independent influence on any of the fear of crime variables. Thus, there is no support, at the multivariate level, for the natural surveillance and fear of crime relationship.

Hypothesis 3 – Older people who believe that there are not enough territorial cues (distinction between private and public space) in their physical environment exhibit higher fear of crime.

The relationship between territoriality and some of the fear of crime variables did not remain strong in the multivariate analysis. Moreover, none of the odds ratio involving the independent variable – *distinction between private and public space* – reached statistical significance when other factors were controlled for.

Hypothesis 4 – Older people who believe that the surrounding area is poorly maintained (landscape conceals activity) exhibit higher fear of crime.

The relationship between the maintenance variable and fear of crime was not observed as predicted. This finding therefore fails to support the hypothesis that poor maintenance will be associated with fear of crime.

Hypothesis 5 –Negative report of the presence of undesirable behaviours will be associated with fear of crime among the research subjects.

The expected association between fear of crime and occurrence of undesirable behaviours/activities was supported. However, the association was significant only for two of the five fear of crime dependent variables – *neighbourhood safety* and *perceived crime rate.* Respondents who report feeling unsafe in the neighbourhood while alone and perceived the crime rate as 'medium-to-high'are more likely to frequently see undesirable activities in the neighbourhood. Thus, limited suppport for this hypopthesis was found and the *neighbourhood scale* variable appears to be a predictor of fear of crime in older adults.

Hypothesis 6 – There will be a positive relationship between socio-demographic variables with fear of crime.

The major finding to emerge from the logistic regression analysis involving the socio-demographic variables was a significant interaction between fear of crime and gender; it was significant for three of the five dependent variables. In general then, the likelihood of reporting a fear of crime was greater for women than for men. Specifically, the probability of feeling unsafe while alone in the neighbourhood is higher for women than for men. Same goes for perceiving the local crime rate as medium-to high and being more worried, where women are significantly more likely in feel these ways compared to men. Limited support was also found for *age* and the *worry scale* variable, however, the effect was reduced as other predictors were included and the resulting models became statistically non-significant.

Hypothesis 7- There will be a positive relationship between fear of crime and history of victimization.

Significant interactions in Model 4 of any of the dependent variables would have confirmed that the probability of fear of crime was significantly higher for those who had been a victim of crime than for those who had not. To the extent that an interaction between previous victimization and three of the fear of crime variables had been significant at the bivariate level, it could not be said that the after controlling for other independent variables that *history of victimization* is a significant predictor of fear of crime.

Hypothesis 8 - Older people with fewer personal resources, such as the lack of opportunity to meet friends and family, having more than one chronic condition, and those who have not done anything proactive to increase their sense of security, will report a higher fear of crime.

There was very little evidence of a relationship between any of the five fear of crime dependent variables and the personal resource variables. The only exception was found in the *perceived safety in the evening* variable and the *perceived safety late at night* variable. In each case, those who report feeling unsafe in the evening or late at night were less likely to take some action compared to those who took none. Nonetheless, this modest effect does not sufficiently indicate that the *action scale* is a significant independent predictor of fear of crime.

6 DISCUSSION

In this chapter, the results of the bivariate and multivariate analyses will be discussed by integrating the theoretical approach of the competence-press model with the relevant insights from the existing literature. As this study's intent is exploratory in nature, the focus of the results section will be to balance the findings from the bivariate and multivariate analyses. This section will be followed by a discussion of the possible implications of these findings, as well as the project's limitations. The chapter concludes with an outline of possible directions for future research in this area.

6.1 Main Results and Theoretical Integration

The role of environmental influences on fear of crime can be understood through the lens of the person-environment theory. Lawton and Namehow's model (1973), "press-competence", captures the interdependence between the environment and individuals as they age. According to this model, the environment and individual resources interact to create favourable or unfavourable situations for aging people. In this study, fear of crime was viewed as a function of reduced competence and increased sensitivity to locational cues (Ward et al., 1986). There are individual threshold points, but adjusting to real-life conditions may not be optimal if the feelings and behaviour continue to be influenced by fear. In other words, older individuals who have a fear of crime lack, to varying degrees, the ability to cope with associated environmental stimulants. For example, an older person with poor eyesight might fear walking past a group of loitering teenagers. When the physical, cognitive and emotional resources of an older person are compromised, their

ability to cope with environmental stressors decreases and this contributes to the sense of vulnerability outside their home. A fear of crime undermines the sense of one's control and creates an imbalance in the person-environment transaction. This study builds on the suggestion made by LaGrange & Ferraro (1987) that fear of crime in response to a global threat needs to be clearly separated from fear of crime shaped by more specific environmental stimuli. Thus, the question becomes to what extent do older people associate selected environmental features with threats to their personal safety?

Under the conditions of this study, a relationship between fear of crime in older adults and the environment was partly supported. Results from bivariate analysis were given consideration in this study and as such natural access control, natural surveillance, and territoriality variables, presence of undesirable behaviours, and history of victimization were all associated with fear of crime. However, the expected associations between most factors identified at the outset of this study and fear of crime was not supported at the multivariate level, except in a few cases. The CPTED concepts, socio-demographic, personal resource and previous victimization variables received limited to no support. The data strongly support the view that older women and the neighbourhood context variable of social disorder have important predictive abilities of fear of crime. The combination of the strong and more modest findings revealed in this study can be explained by including a sample size of 102 into the research design. With such a small number of respondents we were only powered to support moderately strong associations at the multivariate level. Nonetheless, the results of this study indicate there is a measurable association between fear of crime and selected environmental variables. Further research is necessary to provide an enriched description of this relationship.

Hypothesis 1 stated that natural access control, as captured by the variable "adequate fencing" is inversely associated with fear of crime. Respondents who believe that fencing around Sunset Towers is adequate will not express a fear of crime. The results from the bivariate analysis supported this hypothesis, in that three of the fear of crime variables were found to be statistically significant with 'adequate fencing'. These variables were perceived crime rate, neighbourhood safety in the evening and neighbourhood safety late at night. Those who report a fear of crime are more likely to disagree with the statement that the fencing is adequate. Situating this finding within the competence-press model, we observe that the environmental cue of fencing evokes a response in older adults. The control a fence provides a way to manage the possibilities an older person is likely to encounter. Inadequate limits to property access will increase fear of crime because the environment is perceived to be less controlled and therefore engenders a feeling of vulnerability. For example, the garbage bins outside Sunset Towers are not fenced-in, which allows 'outsiders' or 'dumpster divers' to use them as well. The problem arises when the task of throwing out the garbage becomes riskier because of the perceived threat these strangers embody.

Results from the multivariate analyses did not provide support for these associations. Moreover, there were no statistically significant relationships between the fencing variable and any of the fear of crime variables. This finding could be attributed to the fact that a better measure, not included in the survey, could have been used to test the hypothesized relationship between natural access control and fear of crime. For example, a particular area surrounding Sunset Towers could have been identified and a specific

question developed to ascertain whether respondents felt there was more than one way, (i.e. escape routes), to traverse the space.

Shaped by the CPTED principle of natural surveillance, hypothesis 2 stated that perceptions of inadequate surveillance opportunities would be associated with higher report of fear of crime. Of the five fear of crime dependent variables investigated at the bivariate level, three were found to moderately support this hypothesis: perceived crime rate, perceived neighbourhood safety and perceived safety late at night. Fear of crime resulted in moderate relationships with the sidewalk lighting, meaning that those who report a fear of crime are more likely to disagree that the sidewalks are adequately lit. In this case, an environmental cue, like sidewalk lighting, does not appear to translate into feelings of confidence about personal security. This fear impacts the way an older person perceives and responds to his or her environment. It makes it difficult for an older individual to compensate for unsupportive elements in the environment.

At the multivariate level, no support for an association was found. This was contrary to expectations. The absence of support at the multivariate level may be explained by the fact that a related variable that describes the scene in which the lighting is necessary may mediate the relationship with fear of crime. For instance, Vrij and Winkel (1991) found that poor lighting in a 'deserted' streetscape was perceived to be unsafe. The lack of support for this hypothesis may also be attributed to the small sample size used in this study; true weak effects are not necessarily revealed in samples of less than 200.

Hypothesis 3 proposed a relationship between territoriality and fear of crime. It asserted that when there is recognition of a commonly perceived boundary between

public and private spaces there is less fear of crime. At the bivariate level, partial support was found for this hypothesis. The territoriality measure - distinction between private and public space – resulted in statistically significant associations with perceived crime rate, perceived safety in the evening and perceived safety late at night. There was support for an association between perceptions that the neighbourhood is unsafe in the evening and late at night with perceptions that there is inadequate distinction between public and private spaces. As interpreted through the competence-press model, this finding suggests that the environment is exerting press on the individual in such a way that their perception that there is not enough distinction between private and public spaces translates into a fear of crime response. Perceiving that the environment is threatening can influence the way that an older person lives life and it also may mean making decisions that are detrimental to their well-being, i.e. reducing the number of social engagements.

At the multivariate level, no support was found for this hypothesis when other factors were statistically controlled. This finding appears to contradict previous studies. For example, Patterson (1977) found that among older adult homeowners, a lower fear of crime was associated with a strong sense of territoriality. The difference between their study and the present one may be explained, in part, by time and the fact that different generations have different cultural constructions of territory. In addition, the influence of owning versus renting can be an intervening variable relevant to this sample of renters. Further investigation is therefore warranted.

Hypothesis 4 specified that poor maintenance would be associated with fear of crime. Bivariate analyses revealed an association for only one of the fear of crime

variables – perceived crime rate. A relationship was found between perceived crime rate and perceived landscape concealment. The weak association observed at the bivariate level disappeared in the logistic regression analysis. This finding is not consistent with other research, which found maintenance to have a significant influence on perceived levels of crime, nuisance and fear of crime (Cozens, Hillier and Prescott, 2002).

Hypothesis 5 is based on the recognition that signs of social disorder can be threatening to people (Skogan, 1990). This hypothesis tested the link between fear of crime and perceptions of undesirable behaviour in the vicinity. Results from the bivariate analyses provided clear support to this hypothesis. Several statistically significant relationships were found between the independent variable-- undesirable behaviours--and all of the dependent variables: perceived neighbourhood safety; crime rate; worry scale; perceived safety in evening; and perceived safety late at night. Taylor, Schumaker, and Gottfredson, (1985) found that higher levels of physical decay or social disorder were not reliably associated with higher levels of fear. Instead, the impacts were mediated by overall neighbourhood context and what the residents felt were the underlying causes for the decay. Nonetheless, what is important is that older adults appear to associate social disorder cues in their environment with threats to their personal security. The multivariate analysis corroborated these findings. Some support was found for the hypothesized relationship for two of the fear of crime variables – neighbourhood safety and perceived crime rate. The probability of feeling that the neighbourhood is unsafe or that the crime rate is higher, is related to the likelihood of seeing undesirable activities occurring. Those respondents who felt a fear of crime are vulnerable to the environmental press of their surroundings. The social disorder cues of undesirable behaviours can create a stressful

situation for older people, but their individual abilities and resources may help them overcome the challenge. In other words, fear of crime appears to be linked to an awareness of the signs of social disorder and such cues exert a strong influence over older adults insofar as they are part of the environment in which individual adaptability is being challenged.

Hypothesis 6 implies an association between socio-demographic variables and fear of crime. Age, sex, level of education and length of stay were the socio-demographic variables used in this study. No significant relationship was found for age at the bivariate level; however, at the multivariate level, there was an inverse association shown with the worry scale. It appeared that the older respondents were less worried than their younger counterparts. Interestingly, the association disappeared as other variables were controlled for. Age has been consistently shown in previous studies to be an important predictor of fear of crime (Normoyle and Lavrakas, 1983, Lee, 1982; Baldassare 1986; Ortega and Myles, 1987) and though it was not a significant predictor in this study, being older means facing sensory and cognitive changes that will increasingly affect individual ability to interact with the environment and in the process heighten their sense of insecurity.

Of the four socio-demographic variables, support at the bivariate level was only found for an association between fear of crime and sex. This relationship was significant for three of the five dependent variables. A moderate association between perceived neighbourhood safety and sex was found whereby those who perceive an unsafe neighbourhood are more likely to be females than males. Similarly, older women were more likely to be worried and to have negative perceptions about the local crime rate. In

general, the likelihood of reporting a fear of crime was greater for women, an association that also held at the multivariate level. An explanation for the gender-based difference found here and in other studies (Petee et al., 1985) may be that the traditional methods of socialization have led to differences in men and women's capacities to handle environmental stressors related to fear of crime. The result being that a woman's coping strategy might involve a passive approach to the threat of victimization as compared to a more aggressive approach adopted by men. Furthermore, women may more often feel that they are not physically capable of defending themselves, which may contribute to the difference noted above. Fortunately, the traditional roles and expectations of older men and women are changing. As this occurs, women will become better educated and have access to more resources, and consequently improve their self-image, gain the necessary skills to take more control of the environment and assert themselves in fearful situations.

Support for the association between education and fear of crime was not observed. The assumption underlying this association was that less educated individuals would likely have a different level of understanding about their vulnerability than those with more formal education. Conversely, more educated people would have greater confidence in their coping strategies and would be likely be more aware of and adopt socially sanctioned precautions, like taking personal security seminars, etc. Education, in this case, is one of the personal resources that aging individuals might use to prevail over environmental threats. Contrary to what had been shown in previous research (Cozens et al., 2002), there were no statistically significant associations found between education and fear of crime to report. Future research is necessary to explore this issue further.

Length of stay at the residence, as shown by others (Ward et al., 1986), was expected to be associated with fear of crime. However, the bivariate and multivariate analyses failed to uncover support for this expected association. Although, it was surmised that there was a process of adaptation occurring among the tenants, this was not supported in this study.

Hypothesis 7 stated that previous victimization will be positively related to fear of crime. Bivariate analyses supported this hypothesis, revealing that previous victimization is associated with three fear of crime variables. The relationship between history of victimization and perceived neighbourhood safety was moderate and positive, while the relationships between history of victimization and the worry scale and perceived safety in the evening were weak and positive. Generally speaking, those who expressed a fear of crime were more likely to identify themselves as having been a victim of crime than those who had not. When other factors were statistically controlled in the logistic regression analysis, the relationship between fear of crime and previous victimization disappeared. Thus, previous victimization is not a significant independent predictor of fear of crime. This finding is not consistent with previous research (Pain, 1997; Ferraro & LaGrange, 1988), which found that history of victimization was significantly correlated with fear of crime.

Finally, hypothesis 8 emerged from several studies that suggested a link between an older person's resources and their fear of crime. For instance, Ward and colleagues (1986) concluded that personal resources seem to mediate the process by which stressors or cues are perceived as threats to personal safety. Four personal resource variables were

selected from the questionnaire for analytical purposes: social support networks, health status, mobility status and precautionary behaviour.

Social support networks were not proven to be a statistically significant predictor of fear of crime at either the bivariate or multivariate level. Sacco (1993) also found no support for either a direct or indirect effect of social support on fear of crime. Social support networks are perceived to be helpful in maintaining an individual's sense of control over their lives, yet when considered in a fear of crime context, this variable does not appear to exert enough of an effect to change the likelihood of fear of crime. Referring back to the environment and aging theory, the buffer that social networks can provide in most cases does not help an individual to deal with his or her fear of crime, nor does it help to restore the imbalance between personal competence and environmental press.

Another personal resource variable considered in this study was health status. Intuitively, it would seem that the health of older individuals should predict vulnerability. Health status is an important factor in much of the gerontological literature, particularly as it relates to an older person's ability to withstand the environmental press of their physical and social surroundings. In this case, health status, as measured by the number of chronic conditions, was a statistically significant factor with perceived neighbourhood safety and the worry scale. There was a weak, positive relationship between those who reported feeling unsafe while alone in the neighbourhood and number of chronic conditions that they suffer from. A similar finding was also revealed between perceived crime rate and number of chronic conditions. Those who perceive a higher crime rate were more likely to have a greater number of chronic conditions. The association

disappeared at the multivariate level when other factors were accounted for. Nonetheless, good health should still be seen as a fundamental part of an older person's personal resources, enabling that individual to cope more effectively with environmental press.

Mobility status, as captured by the variable "walk without aids" was considered an important personal resource factor due to the geographic realities of the neighbourhood in which they live in (see Chapter 3). The assumption underlying the inclusion of this variable was that a compromised ability to move independently within a community would mean a greater vulnerability to feeling insecure or feeling unable to resist a possible attack. As held by the person-environment theory, lowered personal competence reduces one's capacity to successfully handle environmental press leading to maladaptive behaviour. No support was found at either the bivariate or multivariate level for an association between mobility status and fear of crime.

The final personal resource variable was precautionary behaviour. Bivariate analysis indicated inverse associations between precautionary behaviour and the fear of crime variable as well as between the worry scale and action scale. Those who were more worried about crime were less likely to take action. Preventative behaviours, such as those included in the survey like avoiding night-time excursions, installing locks on doors, etc. are coping strategies that an older person may use to face a stressor encountered in the environment. Such strategies are important for building personal confidence or esteem and lessening the level of fear. Again, the multivariate results did not support an association. This could be explained by the fact that there might be a difference if the sense of fear is recognized to be indirect or direct. For example, someone who feels personally threatened by a group of loitering teenagers may cross the street or

chose an alternate route, demonstrating behaviour that is different from someone else who would not worry about encountering teenagers on the street. With respect to this study, the behaviours queried in the action scale were associated with generalized environmental threats. The results may have been different if the questions had specifically linked behaviour to a particular threat. In addition, coping strategies used to deal with environmental stressors vary significantly amongst older people, so a definitive connection between coping behaviour and fear of crime could be difficult to uncover.

6.1.1 Summary and Linkage to Theory

Overall, this study provides some insight into the relationship between fear of crime and selected environmental variables. The results support an interaction between an aging individual's resources and the demands of the environment. It is the interplay between such concepts included in this study like gender and neighbourhood context that determines this process and also causes variation between individuals. For example, an older male respondent may not see a person passed out in an alley as threatening whereas an older female respondent would. Environmental triggers can be differently viewed, but as Ward, LaGory and Sherman (1986) would say, these triggers become more 'consequential' to older persons with fewer coping resources. Fear of crime undermines the sense of control of individuals who are disadvantaged and puts their well-being in jeopardy.

While many of the expected associations were not observed at the multivariate level of analysis, there were several important relationships that reached statistical significance. In terms of environmental variables, the concept of social disorder, as captured by the undesirable activity scale, was one of two variables that had a strong

effect on fear of crime at the multivariate level. Respondents who report a fear of crime are more likely to observe undesirable activities occurring frequently in their neighbourhood. It was also interesting to see that the influence of gender remained consistent with the literature, whereby women are more likely to report a fear of crime than men. While the disclosure of these two findings is important, the results from the bivariate analysis deserve to be considered valuable in their own right. The findings at the bivariate level included a much broader range of neighbourhood context variables as good predictors of fear of crime. For example, lighting, fencing and boundary distinctions were all modestly associated with some of the fear of crime variables. As mentioned previously, the effect of these variables may have been stronger had a larger sample size been included. Nonetheless, having identified a possible array of environmental determinants of fear of crime in this way, means that environmentally induced fear of crime is a valid piece of person-environment transactions and that more research is necessary to arrive at a more precise articulation of this interaction.

6.2 Implications

This pilot study was conducted to explore the association between fear of crime and various environmental variables. Partial support was found for natural access control, natural surveillance, and territoriality variables, presence of undesirable behaviours, and history of victimization especially at the bivariate level. The modest results should be used to guide the development of new hypotheses. For instance, many different aspects of the built and social environment were supported at the bivariate level suggesting that these or similar variables could be useful in other studies. Lighting levels, territorial markings, etc. appear to affect fear of crime. The question becomes how to better isolate

these variables when a myriad of other factors also contribute to the dynamic interaction between human behaviour and the environment. The influence of the environment on behaviour has long attracted much attention by researchers. Indeed this study contributes to the ongoing interest by providing some insights into the large array of possible environmental influences on fear of crime. Yet, the primary contribution made by this study is to confirm that further evaluation is necessary and worthwhile.

Similar to other exploratory studies, future studies would likely benefit by expanding their scope to include: a longitudinal approach, a larger sample of older people, and/or a sample of older people living in different age-heterogeneous complexes, and/or a sample of young residents for comparison purposes. An expanded scope, would also serve to increase our knowledge of any similarities and differences that may exist between individuals and the ability to compare and contrast samples in this way and would facilitate critical evaluation of future and existing research projects.

Finally, this study incorporated five different dependent variables to capture the fear of crime concept: perceived neighbourhood safety, perceived crime rate, worry scale, perceived safety in the evening and perceived safety late at night. All of these measures of fear of crime were based on subjective evaluations. Such an approach considers that fear of crime is socially constructed and can include different aspects or meanings. Other researchers have used objective indicators (Moeller, 1989; Ortega and Myles, 1987) and some have used responses to just one question (Ward et. al., 1986). There is definitely a need for more qualitative research to enrich our understanding of the fear of crime experience for older adults. Efforts to incorporate a broader range of indicators or layers would be inclusive of the context in which fear of crime is actually experienced and

interpreted by individuals (Yin, 1980). Thus, defining the fear of crime concept in five different, but related ways, as was the case in this study, acknowledges the importance of our perceptions of the built environment and provides the link between human behaviour and the environment.

6.3 Limitations

With respect to the present study, there were several limitations that need to be acknowledged. First, the sample size was small (n=102), which increases the chance of false negative because of reduced power to detect true weak-moderate relationships. In an underpowered study, even large differences between variables may fail to reach statistical significance.

To reduce the risk of researcher bias, participant anonymity was ensured by means of separating identifying information (such as consent forms) from the completed surveys and postponing the input of data into a statistical software program until all surveys were returned. Nonetheless, a second limitation concerns the selection of participants. There may be a bias present, since it was a sample of convenience. All participants lived in a housing complex where the principal investigator worked and were individually approached during the course of a normal workday (recall STAR job description from Chapter 3). Participating tenants may be less isolated and more active than other tenants by virtue of the fact that they were recruited as they either entered or exited their suites. This would limit the generalizability of the results. Future studies should include a random sample and more diverse environments. This would entail, for

example, a broader range of housing complexes, from market housing to assisted living developments, to subsidized 'seniors-only complexes, in order to explore the statistically important differences on fear of crime among community-dwelling elderly.

Third, a new instrument was developed for this study. There were standardized instruments that could have been used (British Crime Survey, 1998; US National Crime Survey, 2000) though these did not fit the specific purpose of the research project. The cities of Edmonton, Toronto, Federal Way and others also have CPTED-specific checklists or safety audits available on the Internet, but the focus of these tools is on crime prevention rather than fear of crime. Furthermore, none of these CPTED tools have not been empirically tested for use in a seniors' population. One could argue that utilization of some of the above-mentioned instruments may have improved the reliability and validity of the measures; however, given the relatively new area of this topic, the emphasis was instead placed on creating a sensitive and practical tool that adhered to the intentions outlined in the project proposal. Careful attention was given to the types of questions to be included and how many were necessary to appropriately measure the important constructs.

Finally, this research study was developed to consider peripheral environmental threats involving a particular seniors housing complex, primarily because it was felt that permission by BC Housing, (which manages Sunset Towers), would be easier to obtain if the focus was on the environment surrounding the building as opposed to the internal environment. Issues of liability, for instance, could have been a real concern. Unfortunately, the principal investigator also acknowledges that anecdotal accounts given over the years in the STAR Office suggest that the greatest perceived threats for many

tenants living at Sunset Towers come from what may or may not be outside the tenants' doors, in the hallways, elevators, or laundry rooms. In the future, a research design that considers both internal and external environments would be useful to draw comparisons between threats perceived as immediate to personal safety, and those that are more global or peripheral in nature.

6.4 Future Research

A number of unresolved issues and directions for future research surround the topic of fear of crime in older adults. Research into environmental factors influencing fear of crime holds promise for those seeking ways to improve the quality of life of older adults and for those keen to contribute meaningful insights in their field. One way for researchers to pursue this goal is to connect individual perceptions of an environment with professional, objective environmental assessments. This may involve organizing focus groups, arranging interviews with designers and police, completing field assessments, etc. This would also facilitate the collection of both qualitative and quantitative information. Enriching the knowledge base in these ways would enable us to develop a deeper understanding of the complex ways in which the environment influences individual perceptions and behaviour related to crime and victimization.

Our understanding of fear of crime and its impacts on older adults is fairly limited in a large part due to the dated research that forms our current state of knowledge. Many of the early studies reported conflicting findings about fear of crime in older populations. Some have found evidence of the phenomenon (Janson & Ryder, 1983; Lee, 1983), whereas others found none (Cutler, 1987). Furthermore, little attention has been placed

on study design and rigorous data analysis that are characteristic of the more systematic research undertaken recently.

Aside from improving the empirical tone of the research being conducted in this area, one of the interesting gerontological research trends is the link to health and well-being. With respect to fear of crime, only a handful of articles have been published on this topic thus far. General findings indicate that fear of crime affects subjective well-being (McKee & Milner, 2000; Ward, La Gory & Sherman, 1986), but much remains speculative about the precise implications of health status on fear of crime. Pre-existing health concerns can be a genuine source of stress for older adults and though it was not found to be a significant factor in this study, health status could have a credible influence on fear of crime. Person environment theory also supports this notion; compromised health state can make older people feel more vulnerable to their environment. This needs to be explored further particularly as an older person's health status is neither straightforward nor static. While the dynamic state of health status makes for more challenging investigations, the link between vulnerability and fear of crime has already been recognized. Future efforts should focus on undertaking research that seeks to understand fear of crime and combine it with efforts to establish policy to alleviate these fears and then we will have the pieces for a health promotion strategy that reduces fear and improves quality of life.

A related area of research to explore is the link between fear of crime and ethnicity. Though this sample included many respondents from different ethnic backgrounds, there was no specific questions focused on ethnicity, and correspondingly, the results did not explore any such link. However, in Watson's (1991) study of risk

factors associated with crime, ethnicity, and aging, fear of crime was so pronounced among ethnic elders that the respondents reported feeling paralysed by their fear and often put themselves under self-imposed 'house arrest.' Such manifestations of fear are also problematic for families, communities and the society at large, presumably because they bear the costs of this intimidation through a breakdown in the family unit, the lack of participation in the community and increased health costs. Feelings of isolation and alienation have been linked with stress (Schwirian and Schwirian, 1993) and the negative impact this has on older adults in general and ethnic older adults in particular merits further study. Little is known about the commonalities and differences amongst ethnic seniors and the more attention given to this area the more appropriate interventions can be established to combat this potential problem using culturally sensitive approaches and solutions.

Lastly, another suggested area of research investigation is the role of the media. Home invasions, in particular, receive considerable attention by media outlets. Since these reports tend to perpetuate negative stereotypes of older adults as victims of crime, some have begun to question whether such portrayals are internalized by seniors. If so, what impact does such a phenomenon have on fear of crime? The media has also contributed to the assumption that older adults have a fear of crime and the research that has emerged thus far, with few exceptions, reflects this negative slant. Changing our perspective from the negative to the positive could be a beneficial research approach. For example, instead of exploring the influences of fear of crime, a different view might include looking at what is associated with individuals who feel secure in their neighbourhood (Schwirian & Schwirian, 1993, Unger & Wandersman, 1985), and this

would likely result in less stereotypical views of older people as vulnerable and feeble individuals. Because these misconceptions exist, and are perpetuated by the media, the issue of fear of crime in older adults is perceived to be an exaggerated problem, rather than an opportunity to improve the quality of life in the absence of negative preconceptions.

6.5 Conclusion

In conclusion, there is still much to explore with regards to the issue of older people and fear of crime. Our current understanding is derived from literature that has tended to focus on specific factors though recognizing that fear of crime does result from a combination of social, psychological, physical and environmental factors. We should strive to improve upon this record and design studies that investigate the wide variety of influences that contribute to an older person's sense of fear. Knowing that the elderly population in Canada is rapidly increasing and that many of these individuals exhibit concern about victimization and personal safety also needs to be better reflected in professional practices. Every effort to create relevant design-oriented interventions affords older people the options of assistance in overcoming environmentally induced fear of crime. This study reflects this noble goal through its exploration of which environmental features surrounding a seniors housing complex may influence perceptions of fear. While it is difficult to determine with any precision, all environmental risk factors that affect feelings of insecurity in an older adult population, there is utility in the research that seeks to understand older people's anxiety about their surroundings and that provides a knowledge-based foundation for improving their quality of life.

APPENDICES

APPENDIX A – SURVEY

SAFETY & FEAR OF CRIME CONCERNS

This is an important study of safety concerns among older adults living in Sunset Towers.

S.1. Do you feel the surrounding neighbourhood is generally safe?

☐ (i) Very safe ☐ (ii) Safe ☐ (iii) Somewhat unsafe ☐ (iv) Very unsafe

S.2 Do you feel the crime rate in your neighbourhood is...

☐ (i) High ☐ (ii) Medium ☐ (iii) Low

S.3. Please indicate how safe you feel when you are alone in the surrounding neighbourhood at different times during a day?

	(i) Very safe	(ii) Safe	(iii) Somewhat unsafe	(iv) Very unsafe
a. Early morning	☐	☐	☐	☐
b. Morning	☐	☐	☐	☐
c. Afternoon	☐	☐	☐	☐
d. Evening	☐	☐	☐	☐
e. Late night	☐	☐	■	☐

S.4. How worried are you about:

	(i) Very worried	(ii) Somewhat worried	(iii) Not worried at all
a. Theft of personal property	☐	☐	☐
b. Being mugged	☐	☐	☐
c. Being physically assaulted	☐	☐	☐
d. Being verbally assaulted	☐	☐	☐
e. Being harassed or intimidated	☐	☐	☐
f. Being raped	■	☐	☐

S.5. How often have you seen the following things in your neighbourhood?

	(i) Frequently	(ii) Sometimes	(iii) Never	(iv) Don't know
a. People drunk in public places	☐	☐	☐	☐
b. People using or dealing drugs	☐	☐	☐	☐
c. Teenagers hanging out on the streets	☐	☐	☐	☐

d. Litter	☐	☐	☐	☐
e. Vandalism or graffiti	■	☐	☐	☐

S.6. If you go out in your neighbourhood, how do you generally get around? *(Check all that apply)*

- ☐ (a) Walk without aids
- ☐ (b) Walk with a walker
- ☐ (c) Use a scooter
- ☐ (d) Take a bus/Use Handidart service
- ☐ (e) Drive myself or have others pick me up
- ☐ (f) Hail a cab
- ☐ (g) Do not go out of my apartment

S.7. How often do you complete the following activities in your neighbourhood?

	(i) Never	(ii) Less than once per week	(iii) Twice per week	(iv) Three or more times per week
a. Grocery shopping	☐	☐	☐	☐
b. Other shopping	☐	☐	☐	☐
c. Eat in local restaurants	☐	☐	☐	☐
d. Visit local library	☐	☐	☐	☐
e. Visit doctor	☐	☐	☐	☐
f. Visit local friends or family	☐	☐	☐	☐
g. Visit local religious institutions	☐	☐	☐	☐

S.9. Have you ever been a victim of crime?

☐ (i) Yes ☐ (ii) No

S.10. How much has fear of crime affected your quality of life?

☐ (i) A lot ☐ (ii) Somewhat ☐ (iii) Not at all

S.11. Have you done anything to increase your sense of security in the neighbourhood you live in?

	(i) Yes	(ii) No
a. Joined a neighbourhood watch program	☐	☐
b. Attended meetings about seniors' safety issues	☐	☐
c. Restricted outings to daylight hours only	■	☐
d. Informed someone about your schedule	☐	■
e. Have a relative or friends check-in with you daily	☐	☐
f. Avoided traveling past certain areas	☐	☐
g. Installed a security system	☐	☐
h. Added more locks to your door	☐	■

NEIGHBOURHOOD CHARACTERISTICS

N.1. In general, how satisfied are you with living in the neighbourhood that you do?

- ☐ (i) Very satisfied
- ☐ (ii) Moderately satisfied
- ☐ (iii) Somewhat unsatisfied
- ☐ (iv) Very unsatisfied

There are a few things about your neighbourhood that I would like your ideas on. Could you please tell me if you agree or disagree with the following statements?

ACCESS

N.2.a. There are too many access points into and out of my building

☐ (1) Agree ☐ (2) Disagree ☐ (3) Don't know

N.2.b. There are alternatives paths for me to take if I feel uncomfortable taking my usual route

☐ (1) Agree ☐ (2) Disagree ☐ (3) Don't know

N.2.c. There is not enough fencing surrounding the property

☐ (1) Agree ☐ (2) Disagree ☐ (3) Don't know

N.2.d. My neighbours will notice strangers on the property

☐ (1) Agree ☐ (2) Disagree ☐ (3) Don't know

N.2.e. The zoning of the adjacent area is compatible with my housing complex.

☐ (1) Agree ☐ (2) Disagree ☐ (3) Don't know

SURVEILLANCE

N.3.a. The sidewalks surrounding the building are not well lit

☐ (1) Agree ☐ (2) Disagree ☐ (3) Don't know

N.3.b. The buildings entrances are not well lit

☐ (1) Agree ☐ (2) Disagree ☐ (3) Don't know

N.3.c. There are a few 'blind' corners when I walk around the property.

☐ (1) Agree ☐ (2) Disagree ☐ (3) Don't know

N.3.d. The exits I use most allow me to view the outside area before stepping outside

☐ (1) Agree ☐ (2) Disagree ☐ (3) Don't know

N.3.e. My neighbours watch the activity occurring outside the building

☐ (1) Agree ☐ (2) Disagree ☐ (3) Don't know

TERRITORY

N.4.a. The signs on the property are large and legible

☐ (1) Agree ☐ (2) Disagree ☐ (3) Don't know

N.4.b. There is not enough signage to indicate to strangers this is a private residence

☐ (1) Agree ☐ (2) Disagree ☐ (3) Don't know

N.4.c. There is not enough distinction between public and private spaces surrounding the building.

☐ (1) Agree ☐ (2) Disagree ☐ (3) Don't know

N.4.d. My neighbours will report any suspicious activity

☐ (1) Agree ☐ (2) Disagree ☐ (3) Don't know

MAINTENANCE

N.5.a. The landscaping surrounding the building conceals activity

☐ (1) Agree ☐ (2) Disagree ☐ (3) Don't know

N.5.b. The condition of the surrounding sidewalks is poor

☐ (1) Agree ☐ (2) Disagree ☐ (3) Don't know

N.5.c. There is graffiti on some of the building walls.

☐ (1) Agree ☐ (2) Disagree ☐ (3) Don't know

N.5.d. My neighbours take pride in maintaining their homes

☐ (1) Agree ☐ (2) Disagree ☐ (3) Don't know

N.5.e. Generally, I am satisfied with the appearance of the building

☐ (1) Agree ☐ (2) Disagree ☐ (3) Don't know

ABOUT YOU

P.1. What is your age? _____

P.2 Sex:

☐ (i) Male ☐ (ii) Female

P.3. What is your marital status?

☐ (i) Married/Domestic Partnership ☐ (ii) Single

P.4. Compared to most people your age, how would you rate your health at the present time. Would you say it was...

☐ (i) Excellent
☐ (ii) Good
☐ (iii) Fair
☐ (iv) Poor
☐ (v) Very poor

P.5. Are you experiencing any of the following conditions or illnesses at the present time? (*Check 'yes' or 'no' for each of the following*).

	(i) Yes	(ii) No
a. Arthritis	☐	☐
b. Asthma	☐	☐
c. Diabetes	☐	☐
d. Effects of a stroke	☐	☐
e. Hearing loss	☐	☐
f. High blood pressure	☐	☐
g. Multiple Sclerosis	☐	☐
h. Shortness of breath	☐	☐
i. Vision problems	☐	☐

P.6. What was the highest level of formal education you completed?

☐ (a) no formal education
☐ (b) elementary school only
☐ (c) some high school
☐ (d) high school graduation
☐ (e) technical school
☐ (f) college or university
☐ (g) other_____

P.7. Approximately how long have you lived at this address?_____

Thank you for your cooperation in filling out this questionnaire.

APPENDIX B – INTRODUCTION LETTER

November 14, 2005

Dear Resident,

I am planning to conduct a study of fear of crime and its relationship to the environment. What I intend to do in this study is to survey a sample of older residents from Sunset Towers and ask them questions about the environment surrounding the building in which they live and their perceptions about fear of crime. I would like very much to include your opinion in my study.

The survey should take between 15 –30 minutes to complete. In it, I will ask for some information about you personally – for example, your age, sex and marital status. I will also ask about fear of crime and your opinion about environmental design features located outside your building and the neighbourhood beyond. The information gathered from you and others cooperating in the study will be analyzed and will be used in a paper to complete my Master's degree in Gerontology at Simon Fraser University.

Your response to this survey will be kept completely confidential. It is for research purposes only and will not be seen by the management of your residence or anyone else other than me. Your name will not appear on any data or in the subsequent report. You do not have to answer any questions you do not want to answer.

Survey responses should be submitted not later than **December 15th, 2005.**

As an incentive to participate, four draws for $ 25 credit at Safeway Foods will be made from all completed responses received. Please return ticket with completed survey

If, after the surveys have been tabulated and the study is complete, you wish to have a copy of the summary report, I would be pleased to see that you receive one.

Thank you for your participation.

Yours truly,

Melanie ter Brugge
312- 1655 Barclay Street
Vancouver, BC
V6G 2Y1

APPENDIX C – CONSENT FORM

SIMON FRASER UNIVERSITY

Informed Consent by Participants in a Research Study

The University and those conducting this research study subscribe to the ethical conduct of research and to the protection at all times of the interests, comfort, and safety of participants. This research is being conducted under permission of the Simon Fraser Research Ethics Board. The chief concern of the Board is for the health, safety and psychological well-being of research participants.

Should you wish to obtain information about your rights as a participant in research, or about the responsibilities of researchers, or if you have any questions, concerns or complaints about the manner in which you were treated in this study, please contact the Director, Office of Research Ethics by email at hweinber@sfu.ca or phone at 604-268-6593.

Your signature on this form will signify that you have received a document which describes the procedures, possible risks, and benefits of this research study, that you have received an adequate opportunity to consider the information in the documents describing the study, and that you voluntarily agree to participate in the study.

Any information that is obtained during this study will be kept confidential to the full extent permitted by the law.

Knowledge of your identity is not required.

You will not be required to write your name or any other identifying information on research materials.

Materials will be maintained in a secure location.

Title: **Fear of crime and design: Exploring the linkages in a seniors housing complex**
Investigator Name: **Melanie terBrugge**
Investigator Department: **Gerontology**

Having been asked to participate in the research study named above, I certify that I have read the procedures specified in the Study Information Document describing the study. I understand the procedures to be used in this study and the personal risks to me in taking part in the study as described below:

Risks to the participant, third parties or society:
None

Benefits of study to the development of new knowledge:
Current information about the phenomenon of fear of crime in older adults is lacking and this study would contribute some additional insights in this area particularly as it applies to external environments. Additionally, some residents of Sunset Towers and those who live in the surrounding community have expressed an interest in using the findings of this study to assist them in advocating for solutions to the problem of rising crime rates in the West End.

Procedures:
The participants will be asked to complete a five page questionnaire.

I understand that I may withdraw my participation at any time.

I also understand that I may register any complaint with the Director of the Office of Research Ethics or the researcher named above or with the Chair, Director or Dean of the Department, School or Faculty as shown below.

Department, School or Faculty: **Gerontology**

Chair, Director or Dean: **Dr. A.V. Wister**

8888 University Way,
Simon Fraser University,
Burnaby, British Columbia, V5A 1S6, Canada

I may obtain copies of the results of this study, upon its completion by contacting:
Melanie ter Brugge

I have been informed that the research will be confidential.

I understand the risks and contributions of my participation in this study and agree to participate:

The participant and witness shall fill in this area. Please print legibly

Participant Last Name: **Participant First Name:**

Participant Contact Information:

Participant Signature: **Witness** (if required by the Office of Research Ethics):

Date (use format MM/DD/YYYY):

APPENDIX D– PICTURES OF SUNSET TOWERS

Figure 1: Sunset Towers – Barclay Tower (front)

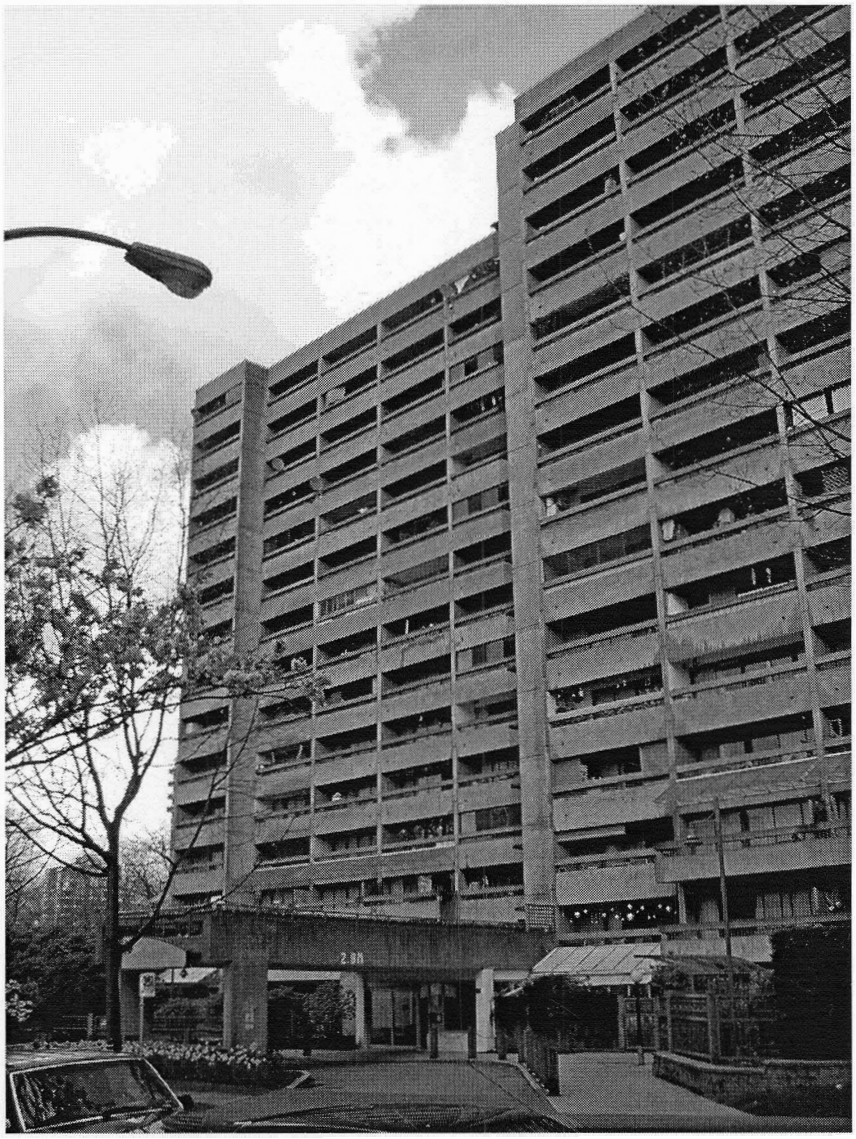

Figure 2: Sunset Towers – Haro Tower (back)

Figure 3: Sunset Towers – View from back alley (between Barclay and Haro Towers)

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