

Burglars' Assessments of Territoriality and Burglary Risk
from Defensible Space Cues

by


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We accept this thesis as conforming
to the required standard



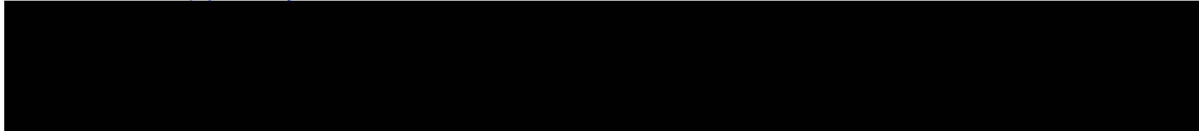
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Abstract

This study investigates the hypothesis that burglars perceive defensible space features as indicative of residents who are more territorially concerned, and therefore, that they perceive the property as less vulnerable to burglary. Twenty male offenders, incarcerated for residential break-and-enter, rated thirty photographs of single-family dwellings on the perceived level of residents' territorial concern. The photographs were the same as those used in a previous study by Macdonald and Gifford (1989). In that study, graduate-student raters assessed each photograph on six defensible space categories, and then, twenty-three male offenders incarcerated for residential break-and-enter, rated the photographs on perceived vulnerability to burglary. The results from this study and the previous study by Macdonald and Gifford (1989) were combined. Path analysis was used to test the relations among the three sets of variables: the defensible space categories, the assessments of residents' territorial concern, and the assessments of burglary risk. Implications for Newman's (1972) theory of defensible space and Brown and Altman's (1981) crime site selection model are discussed.


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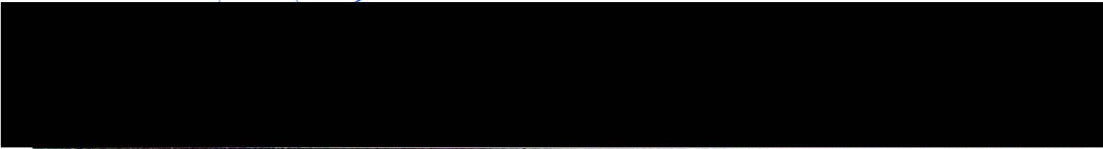
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Introduction

The idea that the physical environment can influence criminal behavior is very old. During the 12th and 13th centuries people erected castles and moats to protect themselves and their possessions; roadside vegetation was cut down to eliminate areas for criminals to hide and to prevent highway robberies (Plucknett, 1960). By the 18th century, street lighting was introduced to reduce crime in London and Paris (Brantingham & Brantingham, 1993). The assumption was that greater visibility would make it more difficult for a crime to take place unseen, thus increasing the likelihood that a criminal would refrain from committing a crime, or that he or she would be caught.

Although the notion that the physical environment influences criminal behavior is very old, research on this subject is relatively new. A substantial amount of this research stems from Oscar Newman's theory of defensible space (1972).¹ The theory proposes that the physical environment can be designed to decrease crime. Defensible space is created by clearly defining an area as under the territorial influence of its residents through the use of territorial displays (e.g., signs or fences), and by providing natural surveillance opportunities for residents. A space designed in such a manner is said to be more easily defended by its residents, and in turn, to be less vulnerable to crime. Early researchers of defensible space theory found some support for direct links between particular design features, residents' territoriality, and crime rates.

It was not until the 1980s that researchers emphasized the offender's perspective: the perceptions and thought processes involved in committing crimes

(e.g. of an exception is Scarr, 1973). Many studies investigated which physical features influence a burglar's assessment of burglary risk. As in the early research, the presence of surveillance opportunities strongly decreased the risk of burglary, whereas the deterrent value of the territorial displays remained unsubstantiated.

Brown and Altman (Brown, 1980; Brown & Altman, 1981) provided a crime site selection model that emphasized offenders' perceptions as mediating the relation between the environment and crime, an idea suggested, but not focused upon by Newman (see Figure 1). The model proposed that potential burglars infer residents' territoriality from the environment, which in turn influences their selection of a house. One study investigated the relation between burglars' assessments of territoriality and their assessments of burglary risk (Brown & Bentley, 1993). Burglars judged houses with neighbors who would react as less vulnerable to burglary. However, burglars' assessments of residents' territorial concern were not related to their assessments of burglary risk. No study examined the relation between the defensible space features and burglars' assessments of residents' territoriality, or whether burglars' assessments of residents' territoriality mediate the impact of the defensible space features on their assessments of a house's burglary risk.

The primary goal of this study is to test the hypothesis that potential burglars infer residents' territoriality from the environment, and that this in turn influences their selection of a house for burglary. Understanding how burglars go

about selecting a house for residential break-and-enter will facilitate the development of crime prevention programs, and perhaps allow us to suggest how residents can decrease their risk of burglary.

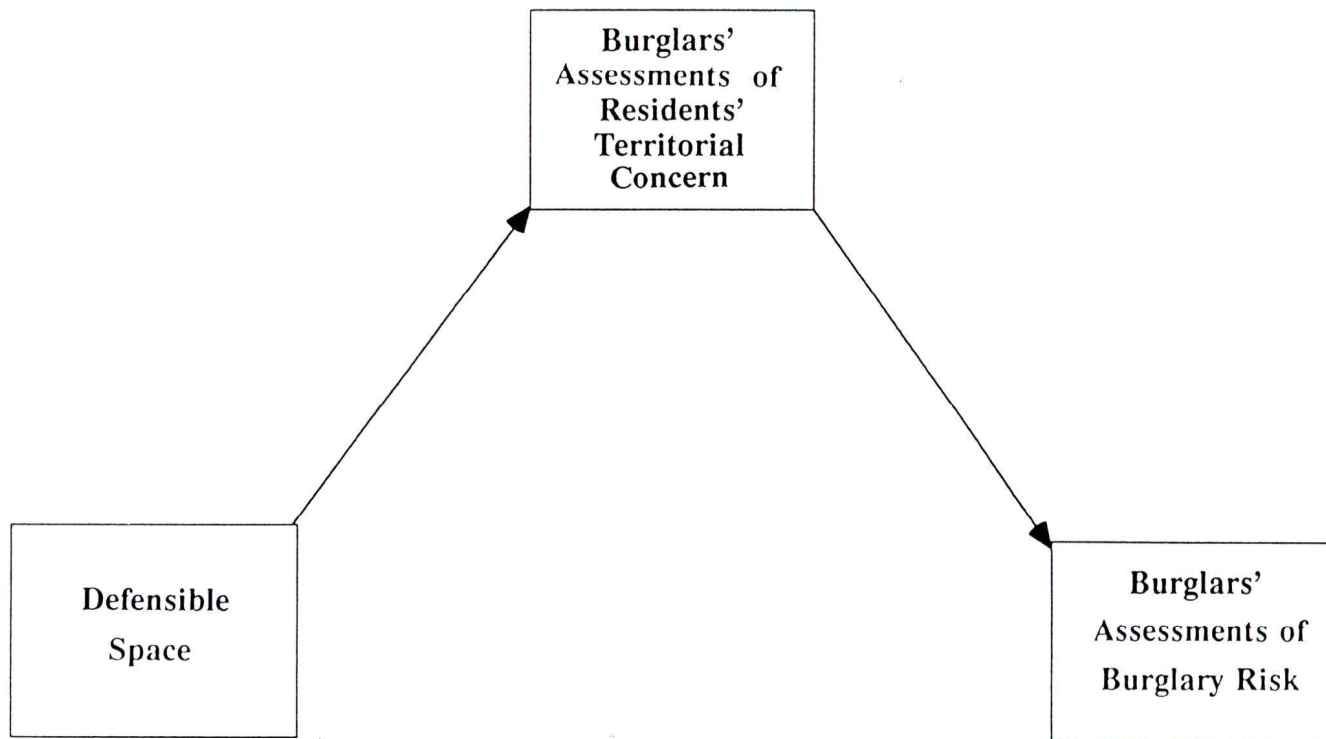


Figure 1. The crime site selection model (adapted from Brown & Altman, 1981).

The logic of linking crime and the environment

Traditional theories of criminology focus on the etiology of crime: why individuals become involved in crime, and whether their involvement is due to physiological, psychological, or socio-cultural causes (Clarke, 1983). Such accounts present a view of a passive individual, one whose behavior is determined by forces beyond his/her control. Thus, traditional methods of crime prevention centre on ways of preventing the formation of criminal dispositions, or once formed, on the treatment and rehabilitation of such criminally disposed individuals.

An alternative approach, developed in reaction to traditional methods that were unable to effectively control crime, emphasizes the importance of understanding the offender's perspective: the perceptions and thought processes involved in committing crimes (Clarke & Cornish, 1985). The assumption is that individuals choose to commit crimes in response to situational circumstances rather than that they are compelled to commit crimes by psychological or social forces. Research with offenders provides support for this view (e.g., Bennett & Wright, 1984; Cromwell, Olson, & Avary, 1991). Crime prevention methods based upon this approach identify the situational factors that influence the probability of a crime. Newman (1972) proposed defensible space theory as a link between the physical environment and crime. According to the theory, certain environmental design features affect the probability of crime. Brown and Altman (1981), further proposed that burglars infer residents' territoriality from the environment, which

in turn, influences their selection of a house for burglary.

Defensible space theory

Defensible space theory (Newman, 1972) proposes that environments can be designed to decrease crime. Defensible space is created by clearly defining an area as under the territorial influence of its residents through the use of territorial displays and by providing natural surveillance opportunities for residents. A space designed in such a manner is said to be more easily defended by its residents, and in turn, to be less vulnerable to crime. That is, residents are expected to be more likely to recognize, question, and challenge strangers, and thus decrease the probability of a crime. According to Newman, potential criminals perceive defensible space features as indicative of occupants who are more territorially concerned and, consequently, the property is perceived as less vulnerable to crime.

Newman (1972) proposed that several design elements combine to create defensible space. Actual and symbolic barriers define an area as under the territorial influence of its residents. Actual barriers such as fences, walls, or gates physically impede access to the territory, whereas symbolic barriers such as signs, plantings, and elevation changes symbolically demark a territory. Opportunities for natural surveillance are provided by large windows or the positioning of shrubs or trees so that the property is clearly visible for occupants, neighbors, and passers-by.

Although defensible space theory was originally intended to apply to multi-family housing complexes, Newman (1975) later widened its application to all

kinds of housing. Early researchers, including Newman, found moderate support for direct links between defensible space features, territoriality, and crime rates. They did not investigate the perceptions and thought processes involved in committing crimes. Critics proclaimed that the theory was overly simplistic and that it contained several unsupported assumptions: Newman did not clearly define the concept of territoriality, he also appeared to assume that the defensible space features are a major determinant of territoriality, and that residents' behavior alone leads to a dramatic decrease in crime (Brown & Altman, 1981; Taylor & Brower, 1980). Current researchers favor a less deterministic approach to the relation between the environment, territoriality, and crime (e.g., Brown & Altman, 1981).

The crime site selection model

Brown and Altman (Brown, 1980; Brown & Altman, 1981) provide a model of crime site selection that emphasizes offenders' perceptions as mediating the relation between the defensible space features and crime, an idea suggested, but not focused upon by Newman. As well, unlike defensible space theory, the crime site selection model is specific to describing the burglary process, rather than all forms of crime. The model proposes that potential burglars infer residents' territoriality from the environment, which in turn influences their selection of a house to break into. Burglars are expected to prefer houses that communicate low levels of territorial concern on the part of residents because the probability of successfully committing a burglary is viewed as higher.

Brown and Altman also present a clearer definition of territoriality: a self/other boundary-regulation mechanism that involves personalization of or marking of a place or object and communication that it is "owned" by a person or group. Personalization and ownership are designed to regulate social interaction and to help satisfy various social and physical motives. Defense responses may sometimes occur when territorial boundaries are violated (Altman, 1975, p.107).

Altman (1975) first described three types of territories (primary, secondary, and public) that vary along dimensions of centrality and duration of occupancy. Primary territories are occupied for relatively long periods of time and are central to the lives of the occupants (e.g., bedroom or house). Secondary territories, such as bars or country clubs, are occupied for shorter periods of time and are less central to the lives of occupants. Public territories, such as a seat in a theatre or library, are of least importance to the occupant, and are usually occupied for brief periods of time.

In order to show how a burglar judges the territorial concern of an area, Brown and Altman (1981) included several additional dimensions that are used to distinguish between the types of territories: marking intention, marking range and type, and defensive responses. Primary territories are marked with the intention of conveying the owner's self-identity (centrality as mentioned above), ownership, and in order to regulate and control access. The markers reflect these intentions and, due to the durability of the territory, may range in size and permanency.

Some examples of primary markers include fences, plantings, and name plates.

The impact of invasion is most severe for the occupants of a primary territory because invasion is usually intentional: Occupants are more likely to defend their territory with physical retaliation.

Secondary territories are marked with the intention of conveying ownership and regulating access, but are less likely to convey self-expression. Markers vary less in their size and degree of permanency because secondary territories are occupied for shorter periods of time. Invasions of a secondary territory are more likely to be unintentional, consequently reactions and defensive responses are less likely.

Due to their transient nature, public territories are defended with occupancy or minimal markers, such as a coat hung over a chair. Residents recognize that markers are less likely to protect a public territory because invasion is usually unintentional. Therefore, defensive reactions to invasion are also less likely.

Brown and Altman's crime site selection model proposes that potential criminals, such as burglars, cross a series of territorial boundaries, ranging from public to private, as they proceed from a street, site, and finally to a house. The different degrees of territoriality are communicated through the various environmental cues. Burglars use the cues to determine the openness/closedness or level of privacy of the territory.² They are expected to prefer territories that appear open or public, rather than a territory that appears closed and private to

strangers, because the likelihood of successfully crossing the various boundaries to enter and exit a given house is higher. Successfully crossing the boundaries means that the burglar is ignored, or at least not stopped by a resident, observer, or the police.

The model further proposes that burglars judge the level of residents' territorial concern within each of the three types of territories: primary (house), secondary, and public. Specifically, at the house-level, more richly and articulately marked territories are less likely to be entered by a burglar, who the authors propose, will be sensitive to the territorial cues and view the possibility of detection as greater.

The model describes several environmental cue categories that burglars use to make a judgment about the level of territoriality in an area (Brown & Altman, 1981, p.67). Five cue categories are considered important: actual barriers (Newman, 1972), symbolic barriers (Newman, 1972), traces of occupancy, social climate, and detectability. Traces of occupancy are those cues that communicate the implied presence or absence of the occupant, such as cars parked in the driveway or mail in the mailbox. Social climate refers to the territorial behavior of residents, such as staring or questioning looks. The fifth category, detectability, is a combination of surveillability (Newman, 1972), and the potential of the environment to provide auditory detection of an intruder, such as the crunch of footsteps on gravel.

Empirical evidence for the measurement models

The defensible space features. Researchers have used two methods to measure the underlying unity of each environmental cue category. Brown and Altman (Brown, 1980; Brown & Altman, 1983), developed an instrument to rate houses on 215 individual cues that are theorized to belong to the five cue categories. A principle component analysis was performed on each set of individual cues: 80 symbolic barriers, 19 actual barriers, 41 traces, 68 detectability, and 7 social climate variables. Two other studies, (Brown, 1983; Macdonald & Gifford, 1989) followed the same procedure except that the latter study used a condensed (64-item) version of the rating instrument. In general, the results were unreliable: The factor composition for each cue category differed for each study. This method also suffers from the problem of low occurrence rates for specific cues, which affects the generalizability of the results, and misses the human element of perception.

Macdonald and Gifford (1989) used a second approach to measure the environmental cue categories. Brown and Altman's (1983) conceptual definitions of the cue categories were provided for judges (graduate students), who then made global judgments of cue-category representativeness for each house. This method was reliable: Judges consistently agreed on their ratings of the cue categories ($r > 0.89$).³ The global judgments may also be a better measure of how individuals actually perceive the environment because judges are allowed to differentially weight and combine the cues as they form the cue category

judgments. Additionally, the problem of low occurrence rates for specific cues is avoided through the use of the global judgments, which are inferences concerning the cues. However, no studies investigated the relationships between the cue categories: that is, whether the cue categories combine to create defensible space, as Newman (1972) proposed.

Burglars' assessments of residents' territorial concern. Only one study, (Brown & Bentley, 1993), used the territoriality dimensions proposed by Brown and Altman (1981) to measure burglars' perceptions of territorial concern. An index composed of three items that assessed the level of primary territoriality was created. The index assessed: (1) how much residents care about the appearance of their house and yard (centrality dimension), (2) how safe residents feel from burglary, and (3) how profitable a burglary would be at the house. Two other items assessed the level of secondary territoriality: are the residents likely to participate in a Neighborhood Watch Program, and how many of the neighbors on the block would the residents know. In a principle components analysis the five items did load on one component, but the loadings (>0.45) and the reliability of the scale (0.68) were relatively low.

So far, no researchers have empirically tested whether burglars perceive that the dimensions of territoriality combine to create a perceived level of residents' territorial concern, as was suggested by Brown and Altman (1981). Although a step toward this goal, the study by Brown and Bentley (1993) did not adequately assess the territoriality dimensions: very few dimensions were

assessed, and only a single item was used to assess each dimension.

Empirical evidence for the structural model

Defensible space features and burglars' assessments of burglary risk.

Researchers have used numerous methods such as interviews, videotapes, and drive-bys to investigate which physical features influence a burglar's choice of a target. In support of defensible space theory and the crime site selection model, houses that are easily surveillable are consistently mentioned by burglars as less vulnerable to burglary (Bennett & Wright, 1984; Cromwell et al., 1991; Macdonald & Gifford, 1989; Rengert & Wasilchick, 1985). Although occupancy is also consistently mentioned by burglars as a deterrent (Bennett & Wright, 1984; Cromwell et al., 1991; Maguire & Bennett, 1982; Rengert & Wasilchick, 1985; Walsh, 1980), only a few studies find that physical indicators of occupancy are related to assessments of burglary risk (Bennett & Wright, 1984; Maguire & Bennett, 1982; Wright & Logie, 1988). More often, burglars report using direct methods to determine occupancy such as calling the residence, ringing the doorbell, or watching the house until the occupants leave (Cromwell et al., 1991; Macdonald & Gifford, 1989; Maguire & Bennett, 1982; Rengert & Wasilchick, 1985).

Contrary to both theories, burglars do not always report that territorial displays (actual and symbolic barriers) act as burglary deterrents. Some studies even report that burglars are attracted to houses with actual barriers such as fences, walls, or hedges because these features decrease opportunities for

surveillance (Bennett, & Wright, 1984; Cromwell et al., 1991; Maguire & Bennett, 1982; Rengert & Wasilchick, 1985; Walsh, 1980). Although some symbolic barriers, such as "beware of dog" signs, may decrease burglary risk (Macdonald & Gifford, 1989), others, such as ornaments and signs of care, may increase burglary risk because they suggest to burglars that the house contains more valuable items (Bennett & Wright, 1984; Rengert & Wasilchick, 1985). As yet, no studies have related Brown and Altman's "social climate" to burglars' assessments of a house's burglary risk.

Although the market value of the residence is not a defensible space feature, burglars generally report that more valuable houses are more vulnerable to burglary (Bennett & Wright, 1984; Cromwell et al., 1991; Maguire & Bennett, 1982; Rengert & Wasilchick, 1985). This is inconsistent with studies of burglary rates which show that both lower- and higher-income households report the highest burglary rates (e.g., Cohen & Cantor, 1981). Household income is a complex variable: it may measure both proximity to potential offenders and target attractiveness (Smith & Jarjoura, 1989). Repetto (1974) suggests that although burglars are more likely to be found in lower-income areas, within any particular neighborhood they choose the most valuable houses. Therefore, researchers continue to include measurements of house value in studies of burglary risk.

Studies that use interviews, videotapes, and drive-bys have certain limitations. The evaluation of a residence as a potential burglary target may

predominate as an intuition or "gut feeling." Burglars may not be aware of all the cues that influence their evaluation of a target. Studies that rely on these methods usually consist of open-ended questions, and are unable to identify cues of which burglars are unaware. Additionally, interviews and drive-bys are subject to the loss or distortion of memory associated with the recall of past events.

Recent studies of burglars' assessments of residential burglary risk have addressed these concerns by examining the independent influence of a limited number of specific environmental cues on burglars' assessments of risk by manipulating the presence of each cue in photographs of houses (Bennett & Wright, 1984; Wright & Logie, 1988). Surveillability, traces of occupancy (car or open gate), and a symbolic barrier ("beware of dog" sign) decreased burglary risk, whereas actual barriers (hedge or fence) increased burglary risk.

However, an individual's perception is more likely based on complex interactions among individual cues, cue combinations, and cue sequences rather than simply on individual cues (Brantingham & Brantingham, 1978; 1993). Two more recent studies addressed this issue by examining the influence of cue combinations (cue category judgments) on burglars' assessments of burglary risk. In both studies, individuals were presented with photographs of houses and asked to make environmental, territorial, and/or burglary risk judgments. This procedure allowed the judgments to be based upon a wide range of cues and cue combinations.

In the first study (Macdonald & Gifford, 1989), graduate-student raters

judged photographs of houses on many individual cues and on several cue categories. Burglars then viewed the photographs and assessed the houses for burglary risk. The bases of the burglars' ratings were investigated by correlating their ratings with the individual cue and cue category scores. The authors found that cue category scores were better predictors of burglars' assessments of burglary risk than were individual physical cues. Consistent with the previous studies, burglars viewed houses with higher surveillability from the road and for the occupant as less vulnerable to burglary. Houses that were more valuable or exhibited more symbolic barriers were also judged more vulnerable to burglary. Actual barriers and traces of occupancy were not related to burglars' vulnerability ratings.

However, a post hoc analysis (Macdonald & Gifford, 1989), suggested that only two of the six cue categories are fundamentally related to burglars' assessments of burglary risk. When the cue categories were considered in combination, burglars viewed houses with higher surveillability from the road as less vulnerable to burglary, and houses that were more valuable as more vulnerable to burglary. Surveillability for the occupant, actual barriers, symbolic barriers, and traces of occupancy were not related to burglars' judgments of burglary risk.

In the second study (Brown & Bentley, 1993), burglars were presented with photographs of houses and made both environmental and burglary risk judgments. In contrast to Macdonald and Gifford's (1989) findings, houses judged

as occupied were perceived as non-burglarized. Although the perceived profitability of a burglary was not related to judgments of burglary risk overall, a subgroup of profit-oriented burglars rated houses they thought would provide more monetary gain as more vulnerable to burglary.

Macdonald and Gifford's (1989) and Brown and Bentley's (1993) studies differ in one important way. In the former, burglars made the judgments of burglary risk, and an independent group of raters made the cue category judgments. In the latter, the same group of burglars made both judgments, and therefore the judgments were not independent. Nevertheless, the Brown and Bentley (1993) study does suggest how cue category judgments are related to burglary risk in the minds of burglars. The difference between the rating processes may account in part for the differences between the results of the two studies.

In sum, in contrast to previous methods of studying how burglars choose targets, the photograph judgment method avoids some of the problems associated with retrospection. It also circumvents the problem of asking burglars to articulate the reasons for their choices, which may be difficult or impossible for them. Additionally, cue category judgments may be more useful than individual cue measurements, because they more closely resemble the way individuals actually perceive the environment.

Territoriality assessments as mediators between defensible space features and burglars' assessments of burglary risk. Consistent with the crime site selection

model, burglars' assessments of territoriality may relate to their assessments of a house's burglary risk. In the study by Brown and Bentley (1993), burglars judged houses with neighbors who would react and residents showing territorial concern as less vulnerable to burglary. However, when these and other environmental variables (e.g., occupancy) were considered in combination, neighbors' territorial concern remained related to burglars' judgments of burglary risk, whereas residents' territorial concern did not.

As yet, no study has examined the relation between the defensible space features and burglars' assessments of residents' territoriality. Nor has any study examined how burglars' assessments of residents' territoriality mediate the impact of the defensible space features on their assessments of a house's burglary risk.

The Hypotheses

This study tests the following five hypotheses:

- 1) the environmental cue categories combine to create defensible space,
- 2) the dimensions suggested by Brown and Altman (1981) combine to create burglars' assessments of the level of residents' territorial concern,
- 3) burglars' assessments of residents' territorial concern are related to the defensible space features,
- 4) burglars' assessments of residents' territorial concern and a house's burglary risk are related, and
- 5) burglars' assessments of residents' territorial concern will mediate the impact of the defensible space features on their assessments of burglary

risk.

Method

Subjects

The participants in the pilot study were fourteen male burglars between the ages of 19 and 43, incarcerated in Nanaimo Correctional Centre, British Columbia. The participants in the main study were twenty male burglars between the ages of 18 and 45, incarcerated in the Vancouver Island Regional Correctional Centre, British Columbia. The participants in Macdonald and Gifford's (1989) study were twenty-three male burglars, the majority of whom ranged in age from 18 to 30, also incarcerated in the Vancouver Island Regional Correctional Centre. In all three studies, burglars were individuals who were convicted for residential break-and-enter at least once. (See Appendix A for burglars' ages and self-reported experience with break-and-enter crimes.) Only males were selected to participate in the study because very few females commit residential break-and-enter crimes (Juristat Service Bulletin, 1992).

Prison officials recruited the burglars and scheduled the interviews. Officials informed the burglars that researchers from the University of Victoria were interested in finding ways to reduce residential break-and-enter crimes and that participation in the study was voluntary.

Materials and Measures

Photographs. I used a random sample of thirty photographs from the fifty photographs of single-family dwellings that were used in Macdonald and Gifford's

(1989) study (see Appendix B). Fewer photographs were used in order to reduce the length of time taken to complete an interview. In this study, interviews took more time than they did in Macdonald and Gifford's (1989) study because the photographs were rated on nine rather than one question.⁴

Defensible space features. I used the six environmental cue categories from Macdonald and Gifford's (1989) study: actual barriers, symbolic barriers, road surveillability, occupant's surveillability, traces of occupancy, and house value. In that study, Brown and Altman's (1981) conceptual definitions of the cue categories were provided for judges (graduate students), who then rated the houses on a seven-point scale of cue-category representativeness. Three professional property appraisers rated each house's value on a five-point scale.

Burglars' assessments of residents' territorial concern. A scale was constructed to measure the dimensions that Brown and Altman (1981) suggest combine to create burglars' assessments of residents' territorial concern. The three dimensions, that Brown and Altman (1981), and the current author suggest are the most important, were selected to measure burglars' assessments of residents' territoriality: centrality (psychological importance), privacy (openness/closedness), and response to invasion. This study limits itself to measuring the three most important dimensions of the territoriality judgments because of the time constraints involved: participants were only willing to volunteer approximately an hour of their time, and their response accuracy may decrease as they become tired. As it was, each rater took approximately 90

minutes to rate 30 houses on the eight territorial concern items. It is for the same reason that only judgments of residents' primary territoriality were measured.

The items that comprised the territorial concern scale were taken from previous studies that measured this variable, or they were created by the author. Several practice interviews were performed using psychology-student judges to rate the houses on the territorial concern items, until a set of eight easily understandable items were selected. Then, the items were tested for their readability level using the Flesch-Kincaid test to minimize the possibility that burglars would have difficulty understanding the items: Research with offenders in general suggests that they have limited scholastic aptitudes (Gottfredson & Hirschi, 1990).

In a pilot study, burglars rated the houses on the eight territorial concern items, and the scale was revised once more (i.e., item six was reworded). The final set of eight items were used to measure burglars' assessments of residents' territorial concern in the main study (see Appendix C).

Burglars' assessments of burglary risk. Macdonald and Gifford (1989) had burglars rate the photographs on burglary risk; I used the same burglary risk ratings to test the hypotheses of this study. This ensured that the assessments of territorial concern and burglary risk were made by two independent samples of burglars. To confirm that the two samples did view burglary risk similarly, the burglars in the main study were also asked to rate the photographs on burglary risk. However, the burglary risk question was asked last so that it did not

influence the responses given to the territorial concern questions. Then, the burglary risk ratings were compared for the two independent samples of burglars.

Procedure

A pilot study was conducted using a sample of fourteen burglars from Nanaimo Correctional Centre in order to create a scale that measured burglars' assessments of residents' territorial concern. Once the scale was established, the main study was conducted using a sample of 20 burglars from the Vancouver Island Regional Correctional Centre. In the main study, burglars rated the photographs on the perceived level of residents' territorial concern and on burglary risk.

The interview procedure was similar to that used by Macdonald and Gifford (1989). Interviews with burglars took place one at a time in an interview room within a prison. The presentation order of the questions and the photographs were counterbalanced across raters. However, during the main study, the burglary risk question was asked last so that it did not influence the responses given to the territorial concern questions. Because there were more questions asked in this study than in Macdonald and Gifford's (1989) study, each interview took approximately ninety rather than twenty minutes.

For each question, the task involved sorting the photographs into seven piles. Seven numbers printed on cardboard squares were spread out across a table and burglars were verbally given the following instructions:

I will show you photographs of 30 houses. I want your opinion on

(territorial concern or burglary risk question). Look through these photographs. Use the scale provided to rate each photograph. The scale ranges from 1 to 7. One means...(e.g., not likely), and seven means...(e.g., very likely). Sort the photographs into seven piles. Please put at least three photographs in each pile.

Participants in the pilot and the main study were asked several other questions after they sorted the photographs. These questions were asked in order to investigate the similarity between this, and previous samples of burglars from other research studies. The questions were open-ended and elicited long responses from participants. The following questions were asked:

- 1) Why did you break into the house (i.e., your motivation)?
- 2) How did you choose "that" house: did you happen upon it, or did someone tell you about it?
- 3) Did you usually choose houses in or out of town?
- 4) What kind of neighborhood did you usually choose?
- 5) What time of day?
- 6) Were you by yourself or with someone?
- 7) Were you using drugs or alcohol?
- 8) How did you choose a house to break into (i.e., what cues did you use)?
- 9) What kinds of goods did you usually take?

Finally, several demographic variables were collected, such as age, and past experience with residential break-and-enter.

Data analysis

A two-step procedure was used to test the hypotheses in this study: First, the measurement models (defensible space and assessments of residents' territorial concern) were tested using principal components analysis, and second, the structural model was tested using path analysis. This procedure was used to establish the reliability of the measurement models prior to testing the structural relationships between them. That is, this method avoids the interpretational confounding that may occur when the measurement and structural models are estimated simultaneously (Anderson & Gerbing, 1988). In addition, there were not enough subjects ($N = 30$) to perform a simultaneous analysis.

Principle components analysis was used to test the measurement models because both defensible space theory (Newman, 1972) and the crime site selection model (Brown, 1980; Brown & Altman, 1981) conceptualize the constructs of defensible space and assessments of residents' territorial concern as emergent variables (Cohen, Cohen, Teresi, Marchi, & Velez, 1990). Emergent and latent variables are hypothetical constructs which cannot be measured directly. An emergent variable is measured indirectly through the variables that are said to cause it, whereas, a latent variable is measured indirectly through the variables that are said to be caused by it. Therefore, principal components analysis was used to test the measurement models because it assumes the use of emergent variables, whereas common factor analysis assumes the use of latent variables.

Results

Reliability of measures

The defensible space features. Macdonald and Gifford (1989) had five graduate students rate the 30 photographs on six environmental cue categories. (See Appendix D for the mean ratings for each house on the six environmental cue categories.) The reliability (intraclass correlations) of their ratings was high for actual barriers (0.96), traces of occupancy (0.94), road surveillability (0.96), occupant's surveillability (0.90), and low for symbolic barriers (0.71). Because of the low reliability symbolic barriers was left out of subsequent analyses in the main study. Professional property appraisers rated each house's value; the reliability of their ratings was 0.93.

Burglars' assessments of residents' territorial concern. During the pilot study, fourteen burglars rated the photographs on eight items that measured their assessments of residents' territorial concern. (See Appendix E for the mean ratings for each house on the eight territorial concern items.) The Flesch-Kincaid test was used to determine the reading level of each item (see Appendix F). The average reading level for the eight items was grade seven; this was considered satisfactory.

The reliability of the burglars' ratings was assessed for each of the eight territorial concern items. The reliability of their ratings was high for item one (0.94), item two (0.96), item three (0.95), item four (0.93), item five (0.89), item seven (0.85), item eight (0.86), and low for item six (0.57). Because of the low

reliability, item six, (which read: How likely is it that the resident would take some action if they saw a stranger looking at this house from the sidewalk?), was left out of subsequent analyses of the pilot data.

Item six was also reworded for the main study. The burglars in the pilot study appeared to find item six too general: they asked whether the stranger was on the sidewalk in front of the house or across the street, and whether the stranger was just looking at the house, or whether the stranger was casing the house for a burglary. Therefore, for the main study, item six was reworded to read: How likely is it that the resident would take some action if they saw a stranger observing this house from the sidewalk out front? The words "out front" were included to indicate that the stranger was standing on the sidewalk in front of the house, rather than at a distance that was further away. The word "looking" was replaced with the word "observing" to imply the stranger was scrutinizing the house to some extent, rather than just casually glancing at the house. "Casing the house for a burglary" was not used because this would make item six too specific relative to the other two items that measured a more general response to invasion.

For the main study, an independent sample of twenty burglars rated the photographs on the eight items that measured their assessments of residents' territorial concern. (See Appendix G for the mean ratings for each house on the eight territorial concern items.) The reliability of their ratings was high for item one (0.95), item two (0.96), item three (0.95), item four (0.96), item five (0.93),

item seven (0.81), item eight (0.86), and low again for item six (0.75). Therefore, item six was dropped from all subsequent analyses in the main study as well.

Burglars' assessments of burglary risk. Macdonald and Gifford (1989) had twenty-three burglars rate the photographs on burglary risk; the reliability of their ratings was 0.95. I used the same burglary risk ratings to test the main hypotheses of this study (see Appendix H). This ensured that the assessments of territorial concern and burglary risk were made by two independent samples of burglars. To confirm that the two samples did view burglary risk similarly, the twenty burglars in the main study were also asked to rate the photographs on burglary risk; the reliability of their ratings was 0.86 (see Appendix H).

The measurement models

A two-step procedure was used to test the hypotheses in this study. First, the measurement models (defensible space and assessments of residents' territorial concern) were tested using principal components analysis. Based on the results from the analyses, specific variables were selected to test the structural model. Second, the structural model was tested using path analysis.

Defensible space features. The first hypothesis was that the environmental cue categories combine to create defensible space. To test this hypothesis, a principle components analysis with varimax rotation was performed on the five cue categories.⁵ The analysis yielded two components (eigenvalue > 1) that explained 57% of the variance in the set of five cue-category variables (see Table 1). Component one explained 35% of the variance and included actual barriers,

surveillability for the occupant, and surveillability from the road. The loadings were high for surveillability from the road (0.91), moderate for occupants' surveillability (0.72), and low for actual barriers (-0.61). Component two explained an additional 23% of the variance and included traces of occupancy and house value. The loadings were high for house value (0.84), and low for traces of occupancy (-0.60).

Table 1

Principle Components Analysis of the Environmental Category Variables

Items	Rotated component loadings ^a	
	Component I	Component II
1. Actual barriers	-.61	.07
2. Occupant's surveillability	.72	.27
3. Road surveillability	.91	-.06
4. Traces of occupancy	-.04	-.60
5. House value	-.02	.84
Eigenvalue	1.74	1.13
Percentage of variance	34.70	22.60

Note. Symbolic barriers is not included in the analysis because the reliability for this variable was unacceptably low.

^aVarimax rotation was used.

The cue categories were retained as four separate variables to test the structural model, for the following reasons. First, the results from the principle components analysis show that the cue categories are not conceptually similar. Surveillability from the road and house value each loaded highly on a different component which clearly indicates that they have different meanings. As well, the loadings for the three other cue categories on their perspective components range from low to moderate (0.60 to 0.72). This indicates that although the latter three cue categories are somewhat related to surveillability from the road and house value, they are also somewhat conceptually distinct. Second, the principle components analysis did not yield a strong solution: That is, the two component solution explained just over half the variation (57%) in the cue categories. Third, the cue categories are differently related to other variables in the causal model, such as burglary risk (see Table 5 for the intercorrelation matrix). Fourth, in order to limit the number of paths to be estimated in the path analysis, surveillability for the occupant was dropped because it consists of only two cues (see Macdonald, 1986), and it was so similar to surveillability from the road ($r = .54, p = .002$).

Burglars' assessments of residents' territorial concern. The second hypothesis was that the centrality, privacy, and response to invasion measures combine to create burglars' assessments of residents' territorial concern. To test this hypothesis, a principle components analysis, with varimax rotation, was performed on the seven territorial concern items, for the pilot and again for the

main study data.

For the pilot study, the principle components analysis yielded two components (eigenvalue > 1) that explained 91% of the variance in the set of seven items (see Table 2). Component I explained 70% of the variance and included items from the centrality (1, 2, & 3) and the response to invasion dimensions (7 & 8). Component II explained an additional 21% of the variance and included items four and five from the privacy dimension. The loadings for each of the items on their perspective components were high (> 0.80), except for items five and eight. Item five loaded low on component I (0.55), and moderately on component II (0.76), whereas, item eight loaded moderately on component I (0.78), and low on component II (0.58).

Table 2

Principle Components Analysis of the Territorial ConcernItems for the Pilot Data

Items	Rotated component loadings ^a	
	Component I	Component II
One	.96	.17
Two	.97	-.03
Three	.98	-.00
Four	-.14	.94
Five	.55	.76
Seven	.82	.40
Eight	.78	.58
Eigenvalue	4.89	1.49
Percentage of variance	69.90	21.40

Note. Item six is not included in the analysis because the reliability for this variable was unacceptably low.

^aVarimax rotation was used.

For the main study, the principle components analysis yielded the same two components (eigenvalue > 1) which explained 91% of the variance in the set of seven items (see Table 3). Component I explained 70% of the variance and included items from the centrality (1, 2, & 3) and the response to invasion dimensions (7 & 8). Component II explained an additional 21% of the variance and included items four and five from the privacy dimension. The loadings for each of the items on their perspective components were high (> 0.80), except for item five. (Item five reads: How much would the resident like to keep strangers out of the yard?) As in the pilot study, item five loaded low on component I (0.57), and moderately on component II (0.70). Therefore, item five was dropped, and a second principle components analysis with varimax rotation was performed on items one, two, three, four, seven, and eight. The analysis yielded the same two components, and they explained 94% of the variance in the set of six items (see Table 4). Component I explained 75% of the variance and included items from the centrality (1, 2, & 3) and the response to invasion dimensions (7 & 8). Component II explained an additional 19% of the variance and included item four from the privacy dimension. The loadings of the items on the components were high (> 0.90).

Table 3

Principle Components Analysis of the Seven Territorial Concern Items
for the Main Study Data

Items	Rotated component loadings ^a	
	Component I	Component II
One	.97	-.02
Two	.96	-.12
Three	.97	-.10
Four	-.22	.88
Five	.57	.70
Seven	.92	.29
Eight	.86	.47
Eigenvalue	4.89	1.46
Percentage of variance	70.00	20.90

Note. Item six is not included in the analysis because the reliability for this variable was unacceptably low.

^aVarimax rotation was used.

Table 4

Principle Components Analysis of the Six Territorial Concern Items
for the Main Study Data

Items	Rotated component loadings ^a	
	Component I	Component II
One	.97	-.13
Two	.94	-.23
Three	.95	-.24
Four	-.05	.98
Seven	.94	.11
Eight	.92	.29
Eigenvalue	4.48	1.16
Percentage of variance	74.70	19.30

^aVarimax rotation was used.

Two territorial concern variables were defined to test the structural model: TC1 and TC2. The first variable (TC1) was comprised of an index (or mean) of items from the centrality (1, 2, & 3), and the response to invasion dimensions (7 & 8), for the following reasons. First, the principle components analysis indicated that these items have conceptually similar meanings: That is, each of the items loaded highly (> 0.90) on Component I. Second, a preliminary analysis indicated that each of these items are similarly related to the other variables in the causal model. Third, the use of an index rather than principle component scores excludes the possibility of variables that are considered unimportant from contributing (i.e., provides a "clearer" measure of the variables by avoiding the inclusion of low loadings). Fourth, the creation of an index reduced the number of paths to be estimated so that the first causal model (Model A), could be tested.

TC2, or item four from the privacy dimension, was selected as the second territorial concern variable because the principle component analysis indicated that it was conceptually distinct from the other items. That is, item four was the only variable that loaded high on the second component of the principle component analysis. Finally, these two variables (TC1 and TC2), were selected to test the structural model because the principle component analysis yielded a strong solution: The two components explained 94% of the variation in the six items.

Table 5

Zero-Order Correlations Between the Environmental Category, Territorial Concern, and Burglary Risk Variables

	1	2	3	4	5	6
1 Actual barriers						
2 Road surveillability	-.41*					
3 Traces of occupancy	-.02	-.11				
4 House value	-.08	-.12	-.11			
5 TC1	.02	.33	-.33	.52**		
6 TC2	.43*	-.89***	-.08	.11	-.12	
7 Burglary risk	-.02	-.52**	-.24	.55**	.27	.66***

Note. TC1 and TC2 are the territorial concern variables.

* $p < .05$, ** $p < .01$, *** $p < .001$

Burglars' assessments of burglary risk. A correlation between the burglary risk ratings for the two independent samples of burglars (from Macdonald & Gifford (1989), and the main study), was performed to confirm that the two samples similarly rated the thirty houses for burglary risk. The correlation between the burglary risk ratings for the two burglar samples was 0.73 ($p < .05$, $r = 0.83$ corrected for attenuation).

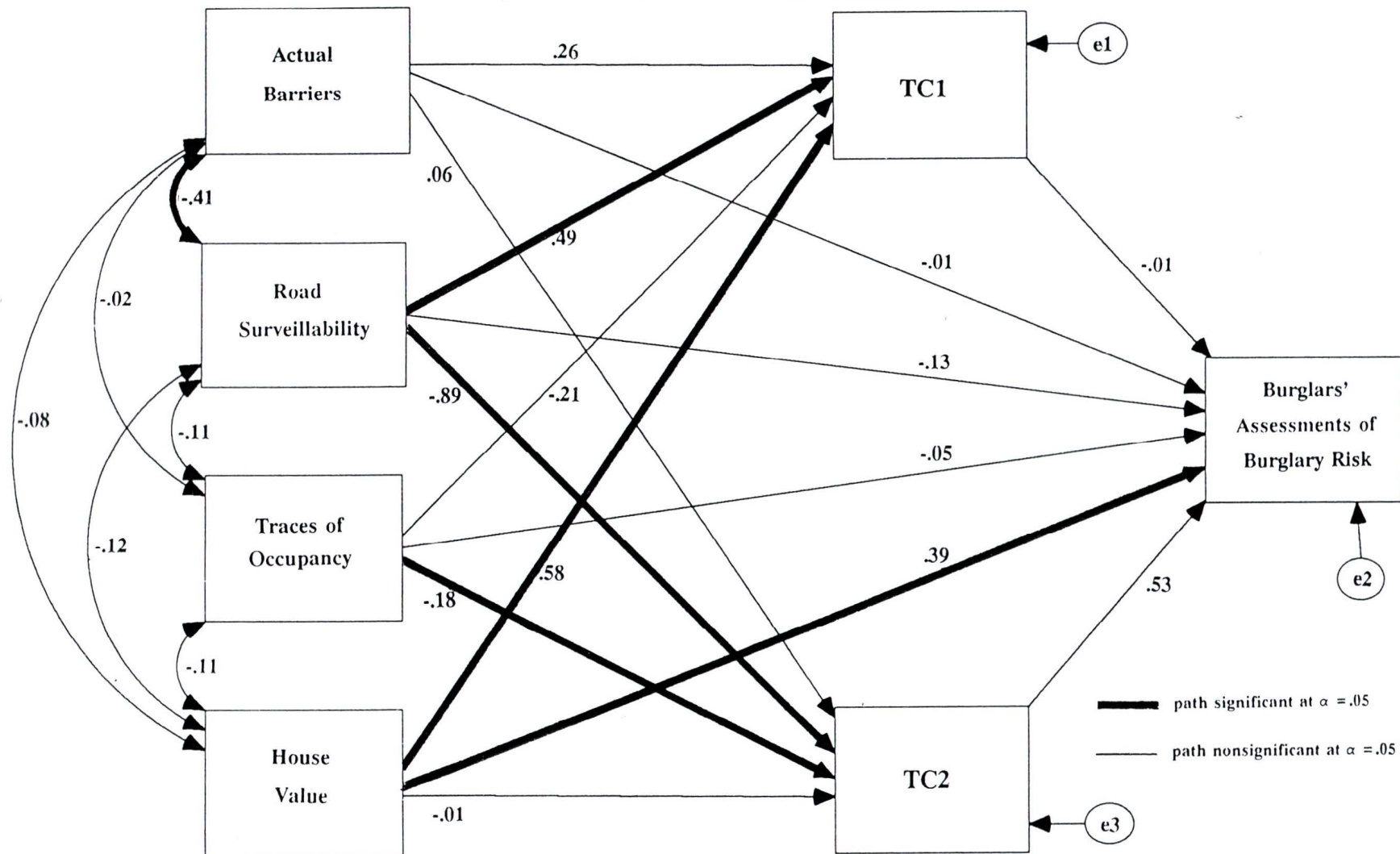
The structural model

The structural model tests hypotheses three, four, and five. The model was tested using path analysis using AMOS, which measures the degree to which the model is congruent with the data (Pedhazur, 1982). The goal of causal modelling is to arrive at a simpler model that makes conceptual sense. Initially, all possible paths between the environmental cue category, assessments of territorial concern, and burglary risk variables, were tested (see Figure 2, Model A).⁶ Then, most of the nonsignificant paths in Model A were discarded, and a simpler representation of the data, that made conceptual sense, was tested (see Model B, Figure 3). The results will be presented generally for Model A, and more specifically in relation to each hypothesis for Model B.

The overall goodness-of-fit test for Model A indicated that the difference between the model's implied correlations and the data correlation matrix was significant ($\chi^2 = 5.49$, $df = 1$, $p = 0.02$). This test is a comparison of how much variation was explained by the paths in Model A, relative to how much variation was explained by the paths in the saturated model (a model where all possible

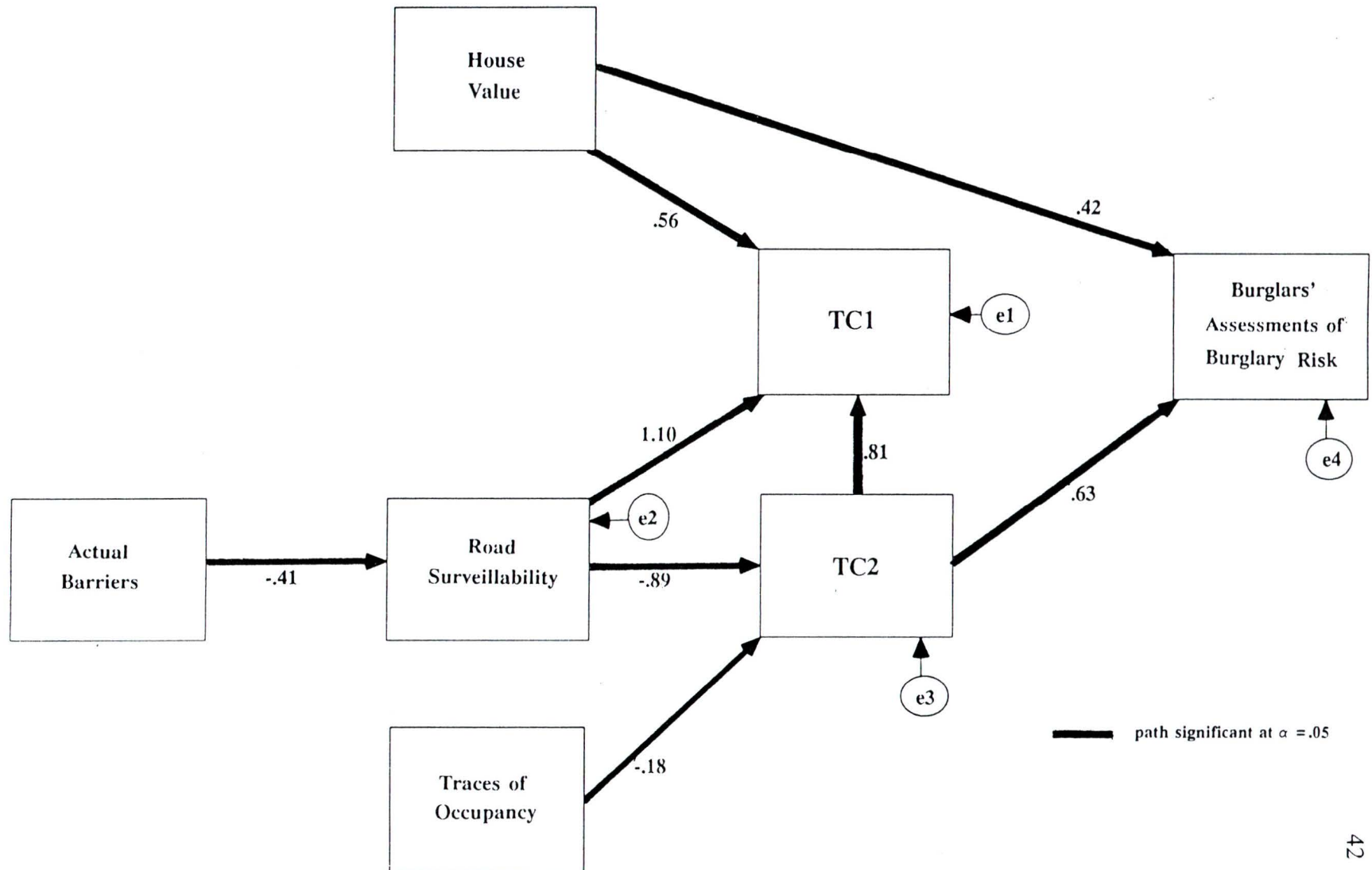
paths between the variables are tested). In this case, significantly less variation was explained by the paths in Model A, than by the paths in the saturated model. An examination of the modification indices, which indicate what paths can be added to improve the model, suggested that the inclusion of a path between the error terms of the two territorial concern variables (TC1 & TC2), would significantly improve the model. In general, three of the four environmental cue categories were related to the territorial concern variables, neither of the territorial concern variables were related to burglary risk, and neither of the territorial concern variables mediated the relationships between the cue categories and burglary risk.

Figure 2. Model A: All paths between variables are tested.



The overall goodness-of-fit test for Model B indicated that it was congruent with the data: There was a nonsignificant difference between the model's implied correlations and the data correlation matrix ($\chi^2 = 6.77$, $df = 13$, $p = 0.91$). This test is a comparison of how much variation was explained by the paths in Model B, relative to how much variation was explained by the paths in the saturated model. In this case, although Model B has fewer paths, the amount of variation explained by these paths is similar to the amount of variation explained by the paths in the saturated model. Although previously nonsignificant, the path between TC2 and burglary risk was retested in Model B because it made sense conceptually. Additionally, the path between the two territorial concern variables (TC1 & TC2), was tested in an attempt to further explain the correlation between their two error terms, as was suggested by the modification indices from Model A. Following are the results for each hypothesis.⁷ The numerical values for the path coefficients are reported as standardized path coefficients to facilitate comparison of the paths between the different variables.

Figure 3. Model B: A simpler representation of the data.



The third hypothesis was that burglars' assessments of residents' territorial concern are related to the environmental cue categories. When Model B was tested, four paths in the structural model, that were relevant to this hypothesis, were significant. Burglars' perceived that residents who had houses with more valuable exteriors and more road surveillability were more territorially concerned (TC1), (0.56 and 1.10 respectively). Additionally, burglars' perceived that houses with more road surveillability and traces of occupancy had residents who liked less privacy (TC2), (-0.89 and -0.18 respectively). No other cue categories were related to burglars' assessments of residents' territorial concern.

The fourth hypothesis was that burglars' assessments of residents' territorial concern and a house's burglary risk are related. When Model B was tested, burglars' perceived that residents who liked more privacy (TC2) were more vulnerable to burglary (0.63). However, the other territorial concern variable (TC1), was not directly related to burglars' assessments of burglary risk.

The fifth hypothesis was that burglars' assessments of residents' territorial concern will mediate the impact of the environmental cue categories on their assessments of burglary risk. When Model B was tested, the territorial concern variable TC2 mediated the relationship between two of the cue categories and burglary risk. Houses that were more surveillable from the road were perceived by burglars as having residents who liked less privacy and also judged as less vulnerable to burglary. In addition, burglars perceived that houses with more traces of occupancy had residents who liked less privacy and that these houses

were also less vulnerable to burglary. The other territorial concern variable (TC1) did not mediate the relationship between the environmental cue categories and burglary risk.

In addition, there were three other significantly mediated relationships. First, surveillability from the road mediated the relationship between actual barriers and TC2. That is, houses with fewer actual barriers have more surveillability from the road, and are perceived by burglars as having residents who like less privacy (TC2). Second, road surveillability mediated the relationship between actual barriers and TC1. That is, houses with fewer actual barriers have more surveillability from the road, and are perceived by burglars as having residents who are more territorially concerned (TC1). Third, TC2 mediated the relationship between road surveillability and TC1. That is, houses that have less surveillability from the road are perceived by burglars as having residents who like more privacy (TC2) and who are more territorially concerned (TC1). The path between the two territorial concern variables (TC1 & TC2), was tested in an attempt to further explain the correlation between their two error terms, as was suggested by the modification indices from Model A. Although the path leading from TC2 to TC1 was significant, the path leading from TC1 to TC2 was nonsignificant: Burglars did not perceive residents who were more territorially concerned as liking more privacy.

Burglars' responses to the open-ended questions

Following are the percentages of responses burglars gave to the open-

ended questions (see Table 6). Percentages are reported for the pilot and the main burglar samples respectively.

Burglars reported that the main motivations for breaking into a house were to get money (14, 50), drugs (7, 50), or alcohol (0, 40). The money was used to support drug or alcohol addictions, or to pay for necessities, such as rent or food. A few individuals reported doing break-and-enter crimes simply for the "rush of it", or because they were bored (21, 10). Burglaries were almost always opportunity crimes: individuals were motivated to do a burglary, and either happened upon a suitable target (14, 15), or searched briefly, on foot (7, 15) or by car (7, 20), until a suitable target was found. A few burglars mentioned hearing about a house beforehand (14, 25), however the house still had to present a favorable opportunity when approached. An exception was one burglar in the pilot study who said that he was sometimes paid to break into a particular house.

Burglars reported committing break-and-enter crimes in middle- (43, 20) and upper-class neighborhoods (36, 30), or in both (14, 35). Most burglars chose houses in (29, 25) or out of town (36, 25). However, some individuals selected houses both in and out of town (14, 45). Burglars worked alone (21, 40), with a partner (43, 30), or either (14, 30), depending upon whether they knew someone they could trust at the time. Burglars reported breaking into houses when residents were unlikely to be home: during the day (22, 60), late at night (14, 5), or both day or night (43, 35). Many burglars used drugs (0, 5), alcohol (21, 10), or both (21, 35) while actually engaged in a break-in. However, a substantial

percentage of burglars used neither drugs or alcohol (21, 50) because they believed that these substances interfered with their ability to successfully carry out the break-and-enter crime. Those that used drugs or alcohol reported doing so to give them the courage they needed to carry out the crime.

The cues that attracted burglars to an individual house related to the visibility, value, and occupancy of the house. The presence of hedges and covering (43, 40), and neighbors that were far away (14, 10) were the main cues that were listed that decreased the possibility that the burglar would be seen while breaking into the house. Houses that looked well-kept and wealthy (43, 20), or had expensive cars (7, 5) indicated the presence of valuable goods inside that were worth taking. Burglars used several different methods to determine whether the house was unoccupied. The most common methods that were mentioned were to ring the bell or knock (29, 30), to check for mail or newspapers in the mailbox (21, 20), to check for a car in the driveway (50, 5), or to call the house from a near-by payphone, then return to the house to listen for the ringing phone, and see if any one answered it (7, 15). The main cues that deterred a burglar from breaking into a house were dogs (29, 15) and alarms (29, 10). Suitable houses could usually be found that were unequipped with either of these cues. Sometimes just alarm stickers (0, 5), particularly ATD stickers, were enough to dissuade the burglar from breaking into the house.

Finally, burglars reported that the goods they most frequently took during the burglary were electronics, such as television or stereo equipment (79, 80),

jewelry, such as gold or diamonds (50, 85), and money (50, 60), or alcohol (21, 10); guns (14, 10), art objects (7, 15), tools (7, 5) and clothes (0, 5) were mentioned less often.

Table 6

Burglars' Responses to the Open-Ended Questions

Question	Pilot study		Main study	
	n	%	n	%
1. Why did you break into the house (i.e., your motivation)?				
Money	2	14	10	50
Drugs	1	7	10	50
Alcohol	0	0	8	40
Rush of it (emotional high)	3	21	2	10
2. How did you choose "that" house: did you happen upon it, or did someone tell you about it?				
Told about house	2	14	5	25
Happened upon it	2	14	3	15
Drive around to find a house	1	7	4	20
Walk around to find a house	1	7	3	15
3. Did you usually choose houses in or out of town?				
Out of town	5	36	5	25
In town	4	29	5	25
Both	2	14	9	45
4. What kind of neighborhood did you usually choose?				
Middle class	6	43	4	20
Upper class	5	36	6	30
Both	2	14	7	35

Table 6 continued on the next page...

Table 6 continued...

Any class	0	0	3	15
5. What time of day?				
Day	3	22	12	60
Night	2	14	1	5
Both	6	43	7	35
6. Were you by yourself or with someone?				
Alone	3	21	8	40
Partner	6	43	6	30
Both	2	14	6	30
7. Were you using drugs or alcohol?				
Drugs	0	0	1	5
Alcohol	3	21	2	10
Both	3	21	7	35
None	3	21	10	50
8. How did you choose a house to break into (i.e., what cues did you use)?				
Cues that attract:				
Hedges and covering	6	43	8	40
House looks well-kept and wealthy, indicates good stuff inside	6	43	4	20
Ring bell/knock - no one home	4	29	6	30
Mail and newspapers in mailbox	3	21	4	20
Neighbors far away	2	14	2	10
No car in driveway	7	50	1	5
Block parent sign	1	7	3	15

Table 6 continued on the next page...

Table 6 continued...

Use payphone nearby, if still ringing at house and no one answers, house is unoccupied	1	7	3	15
Expensive cars	1	7	1	5
Open windows	1	7	1	5
Lights off	1	7	1	5
Looks secluded	1	7	1	5
Blinds/curtains closed	0	0	2	10
Easy access	0	0	2	10
No visibility	0	0	1	5
Lights on	0	0	1	5
Cues that deter:				
Dogs	4	29	3	15
Alarms	4	29	2	10
Deadbolts in windows	0	0	1	5
Motion sensor lights	0	0	1	5
Alarm stickers	0	0	1	5
Block parent signs	0	0	1	5
9. What kinds of goods did you usually take?				
Electronics	11	79	16	80
Jewelry	7	50	17	85
Money	7	50	12	60
Alcohol	3	21	2	10
Guns	2	14	2	10

Table 6 continued on the next page...

Table 6 continued...

Art objects	1	7	3	15
Tools	1	7	1	5
Clothes	0	0	1	5

Note. The sample sizes were $N = 14$ for the pilot study and $N = 20$ for the main study. Some questions have few responses because burglars became sidetracked while telling stories, and did not respond to the question.

Discussion

This study tested five hypotheses: (1) that the environmental cue categories combine to create defensible space, (2) that Brown and Altman's (1981) dimensions combine to create burglars' assessments of residents' territorial concern, (3) that burglars' assessments of residents' territorial concern are related to the environmental cue categories, (4) that burglars' assessments of residents' territorial concern and a house's burglary risk are related, and (5) that burglars' assessments of residents' territorial concern mediate the impact of the environmental cue categories on their assessments of burglary risk. A brief summary of the results for each hypothesis will be presented. Then, the results will be discussed in more detail in relation to defensible space theory and the crime site selection model.

The Measurement Models

The first hypothesis was that the environmental cue categories combine to create defensible space. Contrary to this hypothesis, the cue categories were retained as four separate variables to test the structural model, for the following reasons. First, the results from the principle components analysis suggest that the cue categories are not conceptually similar. Surveillability from the road and house value each loaded highly on a different component which clearly indicates that they have different meanings. As well, the three other cue categories loaded low to moderate on their perspective components. This indicates that although the latter three cue categories are somewhat related to surveillability from the

road and house value, they also remain somewhat conceptually distinct. Second, the principle components analysis did not yield a strong solution: That is, the two component solution explained just over half the variation (58%) in the cue categories. Third, the cue categories are related to other variables in the causal model, such as burglary risk, differently. Fourth, in order to limit the number of paths to be estimated in the path analysis, surveillability for the occupant was dropped because it was so similar to surveillability from the road.

The second hypothesis was that the centrality, privacy, and response to invasion dimensions combine to create burglars' assessments of residents' territorial concern. Contrary to this hypothesis, two variables were retained to test the structural model. The first variable (TC1) was comprised of items from both the centrality (1, 2, 3) and the response to invasion (7, 8) dimensions for the following reasons. First, the principle components analysis indicated that these items have conceptually similar meanings: That is, each of the items loaded highly (> 0.90) on component I. Second, a preliminary analysis indicated that each of these items are similarly related to the other variables in the causal model. Third, the use of an index rather than principle component scores excludes the possibility of variables that are considered unimportant from contributing (i.e., provides a "clearer" measure of the variables by avoiding inclusion of low loadings). Fourth, the creation of an index reduced the number of paths to be estimated so that the first causal model (Model A), could be tested.

The second variable (TC2) that was retained to test the structural model

was comprised of item four, which is from the privacy dimension. This was the only item that loaded high on the second component of the principle component analysis, which indicates that this item is conceptually distinct from the others. Finally, these two variables (TC1 and TC2) were retained because the principle component analysis yielded a strong solution: The two components explained 94% of the variation in the six items.

The Structural Model

The third hypothesis was that burglars' assessments of residents' territorial concern are related to the environmental cue categories. In support of this hypothesis, four paths in the final structural model were significant. Burglars perceived residents who had houses with more valuable exteriors and more road surveillability as more territorially concerned (TC1). However, contrary to the theory, burglars perceived houses with more road surveillability and traces of occupancy as having residents who liked less (rather than more) privacy (TC2). In addition, actual barriers was not directly related to burglars' assessments of residents' territorial concern.

The fourth hypothesis was that burglars' assessments of residents' territorial concern and a house's burglary risk are related. In support of this hypothesis, burglars perceived residents who liked more privacy (TC2) as more vulnerable to burglary. However, this finding is in contrast to the crime site selection model, which predicts that burglars perceive houses with residents who like more privacy (i.e., are more closed to outsiders) as less vulnerable to burglary. Also in

opposition to this hypothesis, the other territorial concern variable (TC1) was not directly related to burglars' assessments of burglary risk.

The fifth hypothesis was that burglars' assessments of residents' territorial concern will mediate the impact of the environmental cue categories on their assessments of burglary risk. In support of this hypothesis, the territorial concern variable TC2 mediated the relationship between two of the cue categories and burglary risk. However, the directions of the relationships were opposite of those predicted by the crime site selection model. That is, houses that were more surveillable from the road were perceived by burglars as having residents who liked less privacy, and also judged as less vulnerable to burglary. Additionally, burglars perceived that houses with more traces of occupancy had residents who liked less privacy and that these houses were also less vulnerable to burglary.

Contrary to this hypothesis, the other territorial concern variable (TC1), did not mediate the relationship between the environmental cue categories and burglary risk. In addition, there were three other significantly mediated relationships, that were not predicted by the crime site selection model. First, surveillability from the road mediated the relationship between actual barriers and TC2. That is, houses with fewer actual barriers have more surveillability from the road, and are perceived by burglars as having residents who like less privacy (TC2). Second, road surveillability mediated the relationship between actual barriers and TC1. That is, houses with fewer actual barriers have more surveillability from the road, and are perceived by burglars as having residents

who are more territorially concerned (TC1). Third, TC2 mediated the relationship between road surveillance and TC1. That is, houses that have less surveillance from the road are perceived by burglars as having residents who like more privacy (TC2) and who are more territorially concerned (TC1). The latter relationship provides some support for the crime site selection model which predicts that burglars perceive residents who prefer more privacy as being more territorially concerned.

Defensible space theory

Defensible space theory (Newman, 1972) proposes that environments can be designed to decrease crime. Several design elements combine to create defensible space: actual barriers, symbolic barriers, and opportunities for natural surveillance.⁸ A space designed in such a manner is said to be more easily defended by its residents, and in turn, to be less vulnerable to crime. That is, residents are expected to be more likely to recognize, question, and challenge strangers, and thus decrease the probability of a crime. According to Newman, potential criminals perceive defensible space features as indicative of occupants who are more territorially concerned and, consequently, the property is perceived as less vulnerable to crime.

The crime site selection model

Brown and Altman (Brown, 1980; Brown & Altman, 1981) provide a model of crime site selection that emphasizes burglars' perceptions as mediating the relation between the defensible space features and a house's burglary risk. The

model proposes that potential burglars infer residents' territoriality from the environment, which in turn influences their selection of a house. Burglars are expected to prefer houses that communicate low levels of territorial concern on the part of residents because the probability of successfully committing a burglary is viewed as higher. The model describes several dimensions that combine to create burglars' assessments of residents' territorial concern.

The measurement models

The defensible space features. The results from this study suggest that the environmental cue categories do not combine to create defensible space.

However, as yet, we may not have discovered the combination of cues and cue categories that create defensible space. Researchers should explore additional environmental judgments, in combination with the defensible space categories, that studies suggest are useful predictors of burglary risk, such as ease of entry and egress, and target hardening (e.g. alarms).

Thus far, researchers have used two approaches to measure the environmental cues or cue categories. The first approach involves rating houses on each of the individual cues that are theorized to belong to the environmental cue categories. This approach suffers from the problem of low occurrence rates of specific cues, and it may miss the human element of perception. The second approach requires raters to make more global judgments of the house's appearance. Judges are able to differentially weight and combine the cues as they form the cue-category judgments, which may be closer to how individuals

actually perceive the environment, and it also circumvents the problem of low occurrence rates for specific cues. In the future, a combination of both approaches may provide a better measure of the environment. Researchers could individually score those cues that are prevalent, and have judges make more global judgments of the cue categories that involve some degree of inference.

In this study, the environmental cue category judgments were made by graduate students. Brown and Altman's (1981) conceptual definitions of the cue categories were provided for judges, who then rated the houses on cue-category representativeness. It would be useful to have burglars make these same environmental judgments. Perhaps burglars would view for example, a judgment such as ease of entry, differently than would non-burglars. This kind of information may provide us with a better understanding of how to measure the exterior environment of a house, specifically in relation to burglary risk.

Burglars' assessments of residents' territorial concern. The results from this study suggest that the centrality and response to invasion dimensions combine to create burglars' perceptions of residents' territorial concern, whereas, the privacy dimension does not. However, when road surveillability is controlled, burglars' perceptions of residents' territorial concern and how much privacy they think the residents like are related: Burglars view residents who like more privacy as being more territorially concerned. Yet, the reverse is not true: Burglars do not view residents who are more territorially concerned as necessarily liking more privacy.

Very few studies have examined the relationship between territoriality and privacy. Brown and Altman (1981) propose that privacy is the central concept in relation to humans, and that territoriality is one of several mechanisms used to regulate privacy. More specifically, they hypothesize that residents who prefer more privacy (i.e., solitude) will be more territorially concerned. The results from this study provide partial support for Brown and Altman's hypothesis: At least in the minds of burglars, when road surveillability is controlled, residents who like more privacy are more likely to engage in the cognitions and behavioral mechanisms associated with maintaining privacy. More investigation is needed to disentangle the relationships between residents' territorial concern, their preference for privacy, and road surveillability.

In addition, further establishment of the territorial concern and preference for privacy measurement models will facilitate our understanding of the relationships between these variables. Future studies should investigate additional dimensions that Brown and Altman, or other researchers suggest measure residents' territorial concern (e.g., safety and duration of occupancy). Additional items to measure privacy, which involves controlling the openness/closedness of self to the social and physical environment, are also needed (Brown & Altman, 1981). The addition of other dimensions will provide a more complete test of Brown and Altman's conceptualization of how burglars' perceive residents' territoriality and privacy, and perhaps afford us a better understanding of the relationship between these variables.

Although this study was limited to measuring burglars' perceptions of residents' primary territorial concern because of the time constraints involved, future studies might also include measures of residents' secondary territoriality. Brown and Bentley (1993) included two items in their index: are residents likely to participate in a Neighborhood Watch Program and how many of the neighbors on the block would the resident know. A combination of items, assessing both kinds of territoriality, may provide a better measure of burglars' assessments of residents' territorial concern.

The structural model

The results from this study suggest that: (1) two of the four environmental categories influence burglars' assessments of residents' territorial concern (TC1), (2) burglars' assessments of residents' territoriality do not influence their judgments of burglary risk, however, (3) two of the four environmental cue categories influence burglars' assessments of how much privacy the resident likes (TC2), and (4) burglars' assessments of residents' preference for privacy influence their judgments of a house's burglary risk.

Defensible space theory and the crime site selection model propose that burglars are attempting to determine qualities of residents (e.g.s, their level of territorial concern and preference for privacy), before choosing a house to break into. In support of the theories, burglars' perceptions of residents' preference for privacy mediate the relationship between road surveillability and burglary risk. That is, burglars judge houses with more road surveillability as having residents

who like less privacy, and also as less vulnerable to burglary.

Contrary to the theories, burglars' perceptions of residents' territorial concern were not related to their perceptions of a house's burglary risk. In addition, when asked to rate the houses on the eight territorial concern items (including the privacy item), many burglars voluntarily stated that the items, which were concerned with qualities of the resident, were not relevant burglary risk. One burglar stated that sometimes he chose a house by following a resident home, who owned a wealthy business or who looked affluent. However, this burglar was more concerned with what the resident's qualities conveyed about the house (i.e., an indication of the presence of goods to steal), than with what they conveyed about the resident. In general, burglars most often mentioned qualities of the house, such as, occupancy, surveillability, and the value of goods inside the house, as influencing their decision to break into the house.

More research is needed to determine whether burglars' assessments of residents' preference for privacy mediate the relationship between road surveillability and their judgments of a house's burglary risk. Although burglars stated that the items they rated the houses on were not relevant to burglary risk, they may unconsciously assess residents' preference for privacy, and this in turn, may affect their judgments of burglary risk.

The relationship between the variables in the structural model may also depend upon whether other or not additional variables, such as occupancy, are considered. For example, it is quite likely that the resident's level of territorial

concern influences the burglar's decision to break into the house when the house is occupied and the resident is able to defend it. However, when the house is unoccupied, the burglar's decision to target the house may be independent of the residents' level of territorial concern. Future studies should investigate this.

Additionally, there may be mediating variables that are not included in the crime site selection model, such as, burglars' assessments of surveillability, occupancy, or profitability of a burglary. Or, there may be other characteristics of residents or their neighbors, such as lifestyle or personality traits, that influence burglars' perceptions. Residents (non-burglars) can accurately infer characteristics of other residents, such as personality traits, directly from house appearances (e.g., Sadalla, Vershure, & Burroughs, 1987). Burglars may make similar inferences about residents, and these inferences may affect their selection of a house for burglary.

Future studies should also investigate whether the characteristics of burglars, such as age or past experience, influence their perceptions of the environment, residents' territoriality, or burglary risk. For example, although residents' territorial concern may not be important to burglars as a group, it may be important to some individuals. In support of this hypothesis, in the study by Brown and Bentley (1993), burglars who specialized in burglary over all other types of crime, according to their arrest records, viewed houses with residents' who were more territorially concerned as non-burglarized. Further investigation of individual differences in burglars will facilitate our understanding of the

burglars' selection of a house for burglary.

The relations between the environmental cue categories, burglars' perceptions of residents' territoriality and burglary risk, may also exist at a different level of analysis. For example, burglars' assessments of territorial concern at the block-level of analysis may influence their assessments of a house's burglary risk. The study by Brown and Bentley (1993) provides some support for this hypothesis: burglars judged houses with neighbors who would react as less vulnerable to burglary, whereas their judgments of residents' territorial concern did not influence their assessments of burglary risk. This suggests that more investigation is needed of the relationships between these variables at other levels of analysis (e.g., the block rather than the site level).

Burglars' responses to the open-ended questions

Burglars in the pilot and the main study were asked several questions to investigate the similarities between this, and previous samples of burglars from other research studies. The ages of the burglars in the pilot and the main study were similar to the ages of the burglars in Macdonald and Gifford's (1989) study: The majority of burglars were between the ages of 20 and 30. However, the age range for burglars in these three studies is slightly older than that of burglars across Canada. Police departments report that although the majority of individuals charged with break-and-enter crimes in Canada range from age 18 to 25 (48%), an additional 32.5% of individuals charged for burglaries are aged 12 to 17 (Juristat Service Bulletin, 1992). However, the burglars in the three study

samples may be slightly older than burglars in general due to the time passed in prison since they were charged for their crime, rather than due to any true difference between the burglar groups.

Burglars were also asked for their experience with break-and-enter crimes. The majority of the burglars in the pilot and the main study reported having committed over 1000 break-and-enter crimes, whereas the majority of burglars in Macdonald and Gifford's (1989) study reported having committed less than 1000 burglaries during their career. This may be because the studies used two different methods to collect the experience with break-and-enter data. Macdonald and Gifford may have presented burglars with categories to choose from (e.g., under 10, 10 - 99, etc.). This study asked burglars for the number of break-and-enter crimes per month, and for the number of years they did break-and-enter crimes. The method used in the pilot and the main study is more rigorous, and therefore, may result in a more accurate measure of this variable.

The responses of burglars, from both the pilot and the main study, for the remaining nine questions (see Table 6) were consistent with the findings from previous research studies, with two exceptions. First, although essentially equal numbers of burglars reported that they committed burglaries either in or out of town, crime statistics show that the majority of burglaries occur in town, specifically, in cities with a population size ranging from 100,000 to 249,000 (Juristat Service Bulletin, 1992). This makes sense because cities typically provide a greater number of offenders and targets, than do less populated rural areas.

Second, although burglars reported committing burglaries in middle- or upper-class neighborhoods, crime statistics indicate that most burglaries occur in lower- and upper-class neighborhoods (Smith & Jarjoura, 1989). However, the finding from this study is consistent with previous interview studies which find that burglars report that more valuable houses are more vulnerable to burglary (Bennett & Wright, 1984; Cromwell et al., 1991; Maguire & Bennett, 1982; Rengert & Wasilchick, 1985).

In sum, the characteristics of the burglar samples, from the pilot study, the main study, and Macdonald and Gifford's (1989) study, were similar to those from other research studies. Thus, the results from this study may be interpreted and compared to those of previous studies.

Conclusion

In keeping with past research, the results from this study suggest that house value and surveillability are important predictors of a house's burglary risk, although burglars' perceptions of the level of residents' territorial concern is not. The results also suggest a relatively new, yet important predictor of a house's burglary risk: burglars' assessments of the level of privacy residents like. Much work is needed before we will be able to fully describe the offender's decision-making process: the pathway from the environment to the selection of a house for a break-and-enter crime. Understanding how burglars go about selecting a house for residential break-and-enter will facilitate the development of crime prevention programs, and perhaps allow us to suggest how residents can decrease

their risk of burglary.

Footnotes

¹The ideas upon which defensible space theory is based were first suggested by Jacobs (1961).

²There are many different kinds of privacy (Westin, 1967). The privacy Brown and Altman (1981) mainly speak of is solitude: being alone.

³An exception is symbolic barriers: the reliability was 0.66. Due to the low reliability, symbolic barriers was not used to test the hypotheses of this study.

⁴In this study, burglars were asked nine questions: eight territorial concern questions, and one burglary risk question. In the study by Macdonald and Gifford (1989), burglars were asked one question about burglary risk.

⁵One way to test whether the cue categories combine to create defensible space is to rate houses using Brown and Altman's (1983) rating instrument, and then, to perform a principle components analysis on the 215 individual cues. However, this analysis is impractical due to the length of time it would take to rate the number of houses that are required (i.e., approximately 2000 houses for an adequate subject-to-variable ratio).

A second way to test this hypothesis is to perform a principle component analysis on the cue-category judgments from Macdonald and Gifford's (1989) study. This method is more practical and will be used in this study.

⁶The path between TC1 and TC2 is the only path not tested in Model A.

⁷All tests in the results section are reported at the 0.05 level of significance unless otherwise indicated.

⁸Brown and Altman (1981), and Macdonald and Gifford (1989) added several environmental cue categories to Newman's list of defensible space categories. The additional cue categories were also used to test the hypotheses of this study.

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Appendix A

Table A1

Burglars' Ages and Self-Reported Experience With Break-and- Enter Crimes

Age and Experience	Pilot		Main		Macdonald & Gifford (1989)	
	f	%	f	%	f	%
Age						
Under 19	0	0	1	5	3	13
20 - 24	9	64	7	35	11	48
25 - 30	4	29	9	45	6	26
Over 30	1	7	3	15	3	13
Experience						
Under 10	1	7	1	5	6	26
10 - 99	0	0	1	5	7	30
100 - 199	0	0	0	0	3	13
200 - 299	0	0	0	0	1	4
300 - 500	3	21	0	0	2	9
500 - 1000	1	7	3	15	1	4
over 1000	9	64	15	75	2	9

Note. N = 14 burglars for the pilot, 20 for the main, and 23 for Macdonald and Gifford's (1989) study. One adult in the latter study declined to give his experience with break-and-enter crime.

Appendix B



#1



#2



#3



#4



#5

NEUTECH



#6

NEUTECH
25% COTTON



#7

25% COTTON

NEUTRICH



#8

78% COTTON



#9



10



#11

25% COTTON

MADE IN U.S.A.



#12



#13



#14



#15



#16



17



#18



#19



#20



#21



#22



23



#24



#25



#26



#27



#28

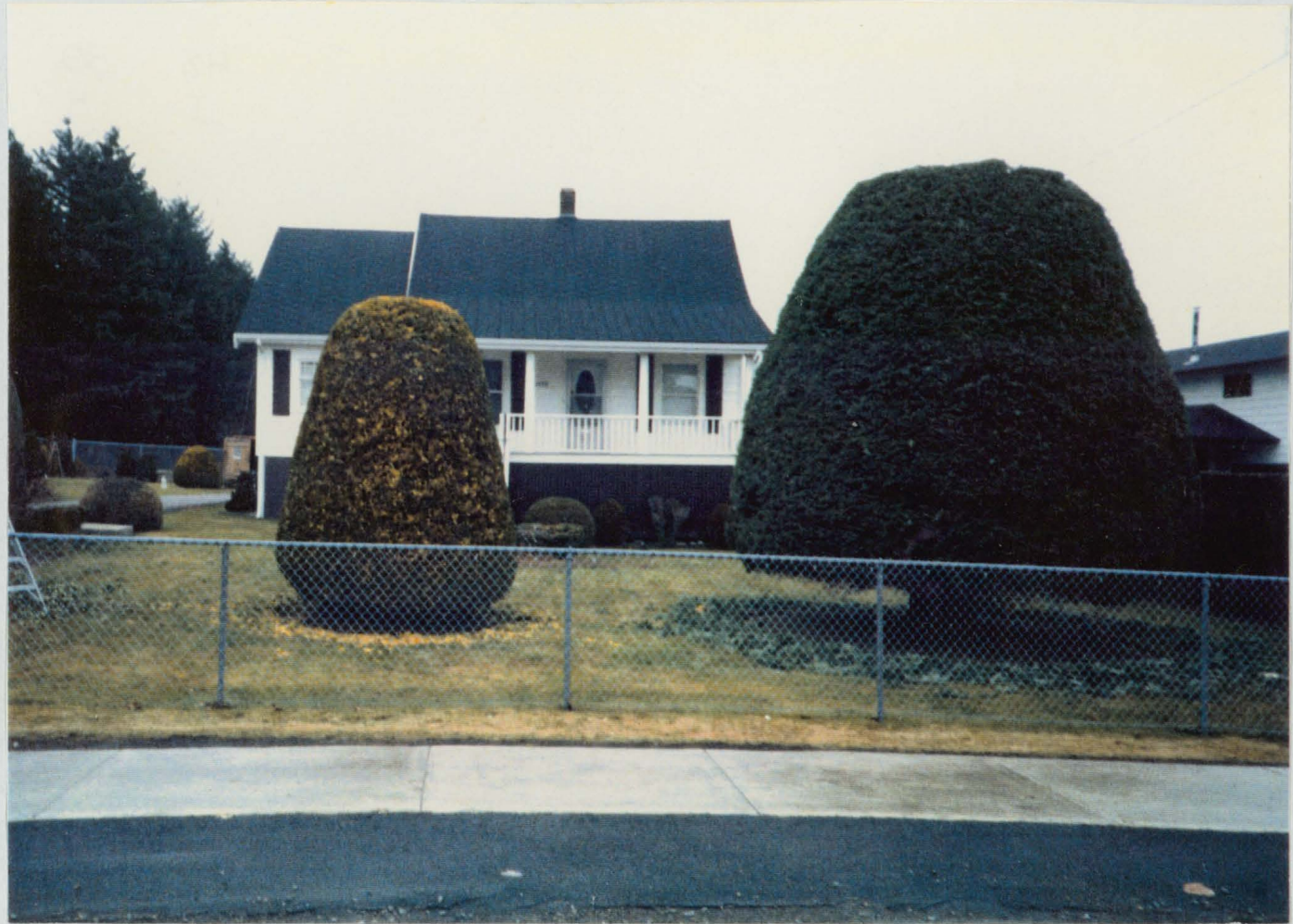
NEUTECH



#29

25% COTTON

NEUTECH



#30

Appendix C

Table C1

Items Measuring Burglars' Assessments of Residents' Territorial Concern

 Dimension and items

Centrality (psychological importance)

1. How proud does the appearance of the house and yard make the resident feel?
2. How much does the resident care about the appearance of the house and yard?
3. How much time and effort has the resident spent fixing up the outside of the house or the yard?

Privacy

4. The appearance of the house and yard tells strangers that the resident likes: (very little - lot of privacy)
5. How much would the resident like to keep strangers out of the yard?

Response to Invasion

6. How likely is it that the resident would take some action if they saw a stranger observing this house from the sidewalk out front?
 7. How likely is it that the resident would take some action if they saw a stranger in the yard?
 8. How likely is it that the resident would feel concerned about a stranger in the yard?
-

Appendix D

Table D1

Mean Ratings for Each House on the Environmental Cue Categories

House	AB	SB	OS	RS	TO	HV
1	3.20	4.00	4.00	4.40	7.00	6.67
2	4.80	2.20	6.20	5.20	5.80	3.00
3	3.40	5.00	3.20	3.20	2.80	5.00
4	5.20	5.20	6.00	3.20	6.20	6.67
5	1.00	2.60	6.20	7.00	2.60	5.33
6	6.20	3.60	3.60	4.20	1.20	6.00
7	4.40	6.00	2.00	1.60	3.00	6.67
8	4.80	3.40	2.80	2.20	6.20	4.33
9	1.80	3.60	2.80	5.60	6.80	3.00
10	2.40	3.00	4.60	5.40	1.40	5.00
11	2.00	4.80	5.40	4.00	2.80	6.00
12	6.20	4.40	5.00	7.00	3.20	3.33
13	3.20	3.60	4.00	7.00	1.80	5.00
14	2.60	3.80	3.40	3.80	6.60	6.00
15	1.80	5.40	6.60	6.40	2.40	7.00
16	2.40	2.60	2.00	4.40	1.00	4.67
17	2.80	4.00	6.20	6.40	3.40	5.00
18	1.00	3.00	4.40	6.20	6.00	6.00
19	3.40	5.80	6.40	5.20	3.60	6.67

Table D1 continued on the next page...

Table D1 continued...

20	1.00	2.40	6.00	6.40	4.60	3.67
21	6.00	3.20	2.80	1.40	2.80	3.33
22	2.60	6.00	3.00	4.20	1.80	4.67
23	4.40	5.20	4.40	4.60	6.80	5.67
24	6.00	2.60	4.80	4.20	6.40	3.33
25	3.40	2.80	3.60	2.40	3.00	5.00
26	4.20	5.20	4.80	5.60	3.00	6.00
27	7.00	4.20	5.20	3.20	3.00	6.00
28	4.00	5.80	4.80	6.60	2.60	3.67
29	2.20	4.00	2.00	4.20	6.40	4.00
30	6.00	5.40	3.40	4.80	3.60	5.67
<u>S</u> ²	2.99	1.41	2.00	2.56	3.78	1.50

Note. AB = actual barriers, SB = symbolic barriers,

OS = occupant's surveillability, RS = road surveillability,

TO = traces of occupancy, and HV = house value.

Note. Mean ratings range from one to seven; one equals a low,

and seven equals a high score on the cue category.

Appendix E

Table E1

Mean Ratings for Each House on the Territorial Concern Items for the Pilot Data

House	Item							
	1	2	3	4	5	6	7	8
1	3.14	3.79	3.07	3.71	3.71	4.86	4.93	4.64
2	1.00	1.00	1.21	2.64	1.86	1.93	1.64	1.36
3	4.57	4.43	4.00	5.50	4.43	3.93	4.50	4.79
4	5.86	5.36	5.64	6.14	6.21	5.36	5.36	6.07
5	4.07	4.71	4.43	1.57	2.64	3.07	2.36	2.57
6	4.43	4.14	3.50	4.57	4.79	3.79	4.29	5.36
7	4.79	4.71	3.79	6.79	4.86	4.57	4.57	4.79
8	2.79	3.07	3.71	5.57	3.79	3.93	4.00	4.57
9	2.07	2.36	1.71	2.86	1.79	2.86	3.50	2.36
10	2.21	2.21	2.36	2.79	2.79	3.79	2.79	2.93
11	4.79	5.29	4.21	5.07	4.14	3.86	3.43	4.14
12	5.43	5.79	5.79	4.14	6.07	4.57	5.21	5.29
13	5.07	5.43	5.64	3.50	3.79	4.50	4.93	4.36
14	3.64	2.71	3.07	4.93	3.71	4.57	5.07	4.00
15	6.50	6.71	6.00	2.57	4.50	4.71	5.64	5.00
16	2.86	3.21	2.50	5.21	2.86	3.14	2.79	3.07
17	5.93	6.21	6.07	3.07	3.29	4.43	5.57	4.71
18	4.29	4.71	4.43	2.57	3.07	3.79	4.21	3.64

Table E1 continued on the next page...

Table E1 continued...

19	6.36	6.71	6.50	3.29	4.71	5.14	5.50	5.57
20	4.50	5.43	5.71	2.86	2.36	3.86	4.14	4.14
21	2.21	1.64	1.50	6.71	4.79	3.50	3.50	3.57
22	4.86	4.36	4.71	4.00	3.07	4.07	4.14	4.00
23	1.93	2.64	2.79	2.64	3.57	4.00	4.29	3.43
24	1.93	2.21	1.86	2.71	3.14	2.86	2.29	2.71
25	3.00	2.07	2.71	6.00	3.57	3.57	3.86	4.43
26	5.14	5.21	5.00	3.14	4.21	4.00	5.29	5.43
27	5.21	4.64	4.71	6.50	6.64	5.29	5.79	5.79
28	5.00	5.71	5.57	3.57	5.43	4.36	5.71	5.29
29	2.50	2.86	2.71	4.21	2.64	3.07	3.21	2.50
30	5.93	5.86	6.21	5.07	5.93	4.21	5.93	6.07
\underline{S}^2	2.31	2.53	2.47	2.26	1.62	.61	1.35	1.45

Note. Mean ratings range from one to seven; one equals a low, and seven equals a high score on the item.

Appendix F

Table F1

Reading Level for Each Territorial Concern Item

Item	Grade	Item	Grade
1	5	5	4
2	6	6	10
3	7	7	8
4	9	8	9

Note. Grade is the school grade level.

Appendix G

Table G1

Mean Ratings for Each House on the Territorial Concern Items For the Main Study Data

House	Item							
	1	2	3	4	5	6	7	8
1	3.65	3.35	2.85	4.00	3.70	4.50	4.50	4.10
2	1.10	1.00	1.05	2.80	2.60	2.90	2.30	2.05
3	4.20	3.85	4.10	5.40	3.90	3.80	4.20	4.42
4	5.80	5.55	5.45	6.00	6.05	5.05	5.30	5.35
5	4.35	4.70	3.80	1.65	2.60	4.65	3.90	3.65
6	4.00	3.85	3.50	3.80	4.90	4.50	4.00	3.40
7	4.95	4.35	3.90	6.90	4.65	3.15	4.15	4.55
8	2.80	3.25	3.05	5.80	4.00	3.25	3.40	3.70
9	2.35	2.60	2.25	3.45	2.50	2.90	2.45	2.80
10	2.75	2.45	2.85	2.95	2.80	4.15	3.85	3.20
11	4.90	4.45	4.35	4.30	3.55	3.95	4.60	4.25
12	5.00	5.40	4.95	3.25	6.55	4.50	5.35	5.70
13	5.70	5.75	5.55	3.25	3.75	4.70	4.30	4.30
14	3.75	3.80	3.20	4.95	3.35	4.60	4.10	4.05
15	6.50	6.70	6.70	2.00	4.75	5.60	5.30	5.20
16	2.70	3.10	2.25	5.95	2.20	2.85	2.65	3.15
17	5.60	5.80	5.95	2.85	3.15	4.84	4.65	4.50

Table G1 continued on the next page...

Table G1 continued...

18	4.30	4.50	3.95	2.55	2.75	4.55	3.55	3.20
19	6.75	6.65	6.35	3.70	4.60	5.15	5.85	5.60
20	4.75	5.55	4.85	2.50	2.95	3.90	4.35	4.25
21	2.15	1.30	1.40	6.95	5.10	2.30	3.70	4.15
22	4.60	5.20	5.00	4.75	4.00	3.70	3.90	4.20
23	2.65	2.90	3.20	3.25	4.30	3.80	3.30	3.85
24	2.40	2.15	2.60	3.05	3.90	3.05	3.30	2.85
25	2.80	3.05	2.80	6.55	4.05	3.65	3.95	4.10
26	5.05	5.40	4.95	2.90	4.50	4.10	4.65	4.95
27	4.95	5.25	4.45	6.25	6.70	4.50	5.25	6.00
28	5.45	5.60	5.25	3.05	5.65	5.10	5.20	5.65
29	2.70	3.35	2.75	3.90	2.05	2.95	3.00	2.95
30	5.25	5.35	5.50	4.90	6.65	4.50	5.60	5.90
$\underline{S^2}$	2.02	2.24	2.08	2.29	1.73	.69	.86	1.15

Note. Mean ratings range from one to seven; one equals a low, and seven equals a high score on the item.

Appendix H

Table H1

Mean Ratings for Each House on Burglary Risk For the Two Burglar Samples

House	Main Study	Macdonald & Gifford (1989)	House	Main Study	Macdonald & Gifford (1989)
1	4.85	6.43	16	5.20	2.78
2	2.25	2.26	17	3.60	3.09
3	4.70	4.91	18	3.35	3.57
4	6.10	6.26	19	5.45	3.13
5	2.85	2.09	20	3.40	3.48
6	3.95	4.78	21	4.45	5.43
7	6.10	6.48	22	4.50	5.22
8	4.20	3.57	23	3.10	2.65
9	3.45	2.65	24	2.25	2.13
10	4.20	4.96	25	5.40	5.78
11	4.75	4.74	26	3.90	2.74
12	2.90	1.96	27	5.35	6.04
13	5.25	5.52	28	3.40	2.17
14	5.10	5.04	29	3.80	4.00
15	4.15	3.57	30	2.70	4.70
			S^2	1.15	2.12

Note. Mean ratings range from one to seven; one equals low, and seven equals high burglary risk.

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Publications and Presentations:

Shaw, K., & Gifford, R., (1994). Residents' and burglars' assessments of burglary risk from defensible space cues. Journal of Environmental Psychology, 14, 177-194.

Shaw, K., & Gifford, R., (1994, July). Residents' and burglars' assessments of burglary risk from defensible space cues. Paper presented at the meeting of the Canadian Psychological Association, Penticton, BC.

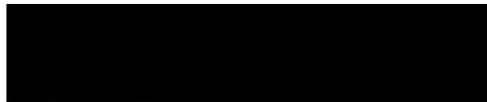
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Cues

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