Journal of Environmental Psychology (1992) **12**, 21–34

0272-4944/92/010021+14$03.00/0

Journal of ENVIRONMENTAL PSYCHOLOGY

THE PHYSICAL ENVIRONMENT OF STREET BLOCKS AND RESIDENT PERCEPTIONS OF CRIME AND DISORDER: IMPLICATIONS FOR THEORY AND MEASUREMENT[1]

DOUGLAS D. PERKINS,*[2] JOHN W. MEEKS† AND RALPH B. TAYLOR†

* *Department of Family and Consumer Studies, Environment and Behavior Area, University of Utah, and*
† *Department of Criminal Justice, Temple University, U.S.A.*

Abstract

There are two purposes to the present study. Our methodological purpose is to develop and test a procedure and instrument for assessing crime- and fear-related features of the urban residential environment. We examine three classes of cues: symbols of social and physical disorder, territorial functioning, and architectural 'defensible space' features. Past research examining the physical environment correlates of fear of crime has relied almost exclusively on subjective perceptions of the environment rather than on independent and objective measures thereof. Our theoretical purpose is to test the 'disorder' thesis of Skogan, and Wilson and Kelling, that actual physical incivilities erode resident's confidence in their neighborhood and lead them to infer that serious local problems, unrelated to the physical environment, are serious. We conducted environmental assessments and resident interviews (n = 412) on 50 blocks in 50 Baltimore neighborhoods. The assessments demonstrated high levels of inter-rater reliability and concurrent validity, controlling for social class. Regression analyses showed that physical incivilities were independently linked to perceptions of social and crime-related problems. The results show that reliable and valid assessment of crime- and fear-related environmental features can be conducted. They also support the central kernel of the Wilson and Kelling, and Skogan thesis, that the actual presence of disorder-related cues engender perceptions of social and crime problems.

The Influence of Disorder on Crime and Fear

Although conceptualized somewhat differently by different researchers, the disorder perspective links the concept of social and physical incivilities, or symbols of disorder, with crime and fear of crime (Hunter, 1978; Lewis & Maxfield, 1980; Skogan & Maxfield, 1981; Wilson & Kelling, 1982; Lewis & Salem, 1985; Taylor & Hale, 1986; Taylor, 1987). Social incivilities include such problems as loitering youths, prostitutes or homeless people, rowdy behavior, drug dealing and public drunkenness. Physical incivilities include such environmental stimuli as litter, vandalism, vacant or dilapidated housing, abandoned cars and unkempt lots.

The most influential statements of the incivilities thesis have been offered by Wilson and Kelling (1982), in an 'important' (Skogan, 1990, p. 10) article, and Skogan (1990). The kernel of the thesis is as follows. As physical incivilities proliferate, residents perceive more problems in the locale and lose confidence in their neighborhood and in the police's ability to prevent or control lawlessness, resident-based informal social controls weaken, residents become more fearful, potential offenders are emboldened, and criminals from adjoining areas are attracted to the locale, and the downward spiral becomes self-reinforcing (Greene & Taylor, 1988; Skogan, 1990, pp. 46–50).

Tests of the linkage between fear and incivilities have focused almost exclusively on residents' *perceptions* of incivilities. For example, Skogan and Maxfield (1981; see also Lewis & Maxfield, 1980; Lewis & Salem, 1985) were able to obtain officially reported crime rates in order to cross-validate the neighborhood-level relationship between fear and perceived crime. But their more influential finding, that neighborhoods with greater incivilities had significantly higher levels of fear, was based entirely on *perceived* disorder problems. Hope and Hough (1988), examining neighborhood-level connections between perceived incivilities and fear also found a very high correlation (approximately r = 0·70) and

suggested that at this level of aggregation the two constructs may not be conceptually separable. Of course, part of the high correlations may stem from the common data source.

Only a very few, recent studies have examined both objective and subjective measures of physical incivilities. Taylor *et al.* (1985) reported that the neighborhood-level relationship between objectively rated incivilities and fear was conditional. They concluded that social and physical incivilities had a moderate impact on fear, after controlling for socio-economic factors, and were operative only in neighborhoods whose future course was uncertain or unstable.

Perkins (1990) corroborated the moderate link between fear and certain independent observer-rated incivilities (e.g. litter) using block-level data. He also found that the formal and informal social organization of the community can help to buffer the impact of incivilities on fear.

Maxfield (1987) found that objective measures of physical neighborhood decay were related to higher fear levels in both the U.S.A. and the U.K., and that the effects were often greater than for perceived vulnerability or victimization.

In short, although the literature on incivilities has been highly suggestive, the exact nature of the relationship between disorder and fear of crime requires further specification. Most of the data have been limited in that signs of incivilities have been measured by subjective perceptions rather than objective measures. Although recent studies have begun to include more objective measures, they have not yet been compared directly with subjective measures. It may be premature to link objectively-measured incivilities with fear before determining the criterion-related validity of the environmental measures.

Another limitation of the existing disorder literature is its exclusive emphasis on negative, fear-inducing cues in the environment. Neighborhoods also contain positive, crime and fear-reducing physical cues. In recognition of the true complexity of the crime and fear-related environment, our model and measure includes physical signs of territorial functioning and 'defensible space'.

Territorial Functioning and Informal Social Control

Behaviors and environmental features relevant to territorial functioning include outdoor property maintenance, beautification (such as yard decorations and gardens), signs of personalization (such as a name plate or fancy address sign), and more direct symbols of protection (such as dogs and 'block watch' signs (Taylor & Brower, 1985; Taylor, 1988). These territorial markers may convey a non-verbal message of control, separation from outsiders, and investment or a stake in the locale (Rapoport, 1982; Taylor & Brower, 1985; Taylor, 1987). If a potential offender should cross territorial boundaries, residents are expected to take some defensive action such as calling out, calling for a neighbor, or calling for the police.

A breakdown in social control is expected in territorial 'gaps' along the boundaries of a neighborhood or where there are non-residential land uses, such as parks, playgrounds, schools, stores, vacant buildings or lots and churches (Taylor & Gottfredson, 1986; Taylor, 1988). But, theoretically, when and where residents perceive the incivilities as reflecting a breakdown in their territorial control, they become fearful. Taylor *et al.* (1984) reported that a lack of territorial control accounted for roughly half of the explained variance in fear of crime. Furthermore, Brown and Altman (1983) reported that non-burglarized blocks had more physical signs of territoriality, broadly defined, and more 'traces' of activity (e.g. toys and other items left outdoors) than did burglarized blocks. Perkins (1986) found that, in particular, personalization signs were more prevalent on blocks with lower levels of fear.

As far as residents and possibly criminals are concerned, crime and fear-related environmental cues on the *block*, as opposed to in the neighborhood, may be most important, especially in the case of territorial markers. Taylor (1988) has suggested that blocks function as ongoing, ecological 'behavior settings' (Barker, 1968), in which homeostatic 'forces' and environmental features on a particular block facilitate certain kinds of standing (normative) behaviors for residents and outsiders alike. Ecological psychologists have generally not considered the continuous social relationships of residential areas (such as blocks) as behavior settings.[3]

Defensible Space

Jacobs (1961) first suggested that certain city planning principles might reduce crime in urban residential areas. For example, buildings should be oriented to encourage natural surveillance by residents; public and private spaces should be delimited into clearly differentiated domains; and public

spaces should be placed in proximity to heavy traffic areas. Newman (1972) carried these ideas further and labeled his architectural design principles 'defensible space'. Newman suggested that certain physical features in the environment would encourage residents to exercise territorial control, which in turn would reduce crime and fear. 'Real barriers' to entry, for example, refer to physical features that impede access such as fences, gates, security bars and high walls. 'Symbolic barriers', in contrast, do not impede entry, but rather symbolize where private space ends and more public space begins. Symbolic barriers include gardens, low railings and shrubbery. Finally, 'opportunities for surveillance' may be encouraged by dividing space into manageable zones and improving outside visibility through better public and private outdoor lighting and reducing obstructions.

Taylor *et al.* (1980) reviewed the strengths and weaknesses of defensible space theory. They also found that real and symbolic barriers were correlated with lower crime and fear levels (Taylor *et al.*, 1984). Coleman (1989) combined several design variables, including defensible space features, into disadvantagement scores for 729 blocks of British public housing. Strong links between these scores and measures of the incidence of crime on the blocks were observed. She concluded that situational and dispositional theories of crime may interlock as design features encourage children to commit crimes, resulting in a 'higher criminalized proportion of each estate-bred cohort of children' (p. 133). Perkins *et al.* (1990) found that defensible space features do not necessarily have the same effect on criminals as residents, however. In that study, although attached buildings and other barriers on residents' property were inversely related to *fear* on the block, they were positively correlated with block *crime* rate. Moreover, Merry (1981) found in a multiethnic housing project that many defensible spaces went undefended due to the lack of contact between different ethnic groups.

Theoretical Consolidation and Measurement Validation

We suggest consolidating all three classes of environmental features into a more general model. Physical and social incivilities, markers of territorial functioning, and defensible space features may *each* have an independent influence on how residents perceive their immediate residential environment. We will test that possibility here. We will investigate three classes of resident perceptions: perceptions of physical incivilities, perceptions of social incivilities, and perceptions of crime.

For the purposes of measurement validation we will assess the connections between environmental assessment measures and resident-based perceptions of physical incivilities, before and after controlling for social class and stability. For the purposes of testing the incivilities (or disorder) thesis (Wilson & Kelling, 1982; Skogan, 1990) we will examine the connections between measures of physical incivilities and all three classes of resident perceptions (physical problems, social problems, and crime problems).

Method

Neighborhood and block selection

The initial step in the sampling framework involved selecting 50 of 277 Baltimore City neighborhoods listed in the 1970–1980 Baltimore Neighborhood Factbook (Goodman & Taylor, 1983) using a systematic (i.e. sampling interval) probability proportionate to size (of 1980 total census population) procedure. In order to attain a sample generalizable to private, low density residential neighborhoods, public housing projects, the downtown business district, neighborhood boundary thoroughfares, physically anomalous blocks (i.e. high-rise buildings or predominantly non-residential) and households in buildings with more than 15 units were excluded from the sampling frame.

Once the neighborhoods were selected, neighborhood leaders and city-wide officials were informed of the overall purpose and procedure of the study. Then one block in each neighborhood was selected from a Baltimore City address-to-telephone or criss-cross directory again using a systematic probability proportionate to size procedure. (Each block was weighted according to the number of separate residential households listed on the block.) A block, our unit of analysis for the present study, was defined as both sides of a street, bounded by cross streets (or dead end).

Household and respondent sampling procedure

Once the 50 blocks were selected and at the same time as the environmental assessment (see below), a field household enumeration and interval household selection were conducted. Eight households were selected on each block. The probability of any given

address being selected for detailed environmental assessment was proportional to the number of residential units at that address. If more than one selected household happened to fall within the same address, that block's aggregate environmental assessment ratings were based on fewer than eight addresses. The total number of addresses in the environmental assessment sample were 365. In the resident survey, eligible respondents were household heads (including spouses), predesignated in a quasi-random fashion (Kish, 1949). Only after several unsuccessful attempts at obtaining an interview, were replacement households (maximum of four per block) allowed. For the survey, within household replacements were not allowed. The detailed household environmental data were not obtained for survey replacement households. Thus, these environmental items are based 69% on respondent households and 31% on non-respondent households. There were no significant differences between respondent and non-respondent household item means on the environmental assessment.

Sample characteristics

Of 412 survey respondents, 65·5% were female. Fifty two per cent of the overall sample were black and 46% were white. All eight or nine respondents were white on 11 blocks and all black on 20. Of the sample (58·5%) were homeowners. Eight respondent-blocks were entirely comprised of homeowners and six were comprised of all renters. The average length of residence in the current home was 12·6 years. Blocks ranged from a mean estimated annual household income of $4650 to $45,357. The mean size of blocks was 43·2 households.

Instruments[4]

Block environmental inventory (BEI). The environmental assessment was conducted in January 1987, and involved in-person daytime observation by trained raters of all three types of crime and fear-related physical cues: (1) incivilities such as litter, vandalism, and abandoned or dilapidated houses; (2) signs of territorial functioning, such as decorating one's yard or putting one's name on a door; (3) defensible space features, such as adequate lighting, surveillance opportunities, and barriers to entry. Items and instructions for the measure were pilot-tested and revised several times prior to the present data collection. Three teams of two raters each were trained on non-study blocks and, once data collection began, were instructed not to discuss a particular rule or rating as they conducted a block assessment. Forty five of the 50 blocks were rated simultaneously by two (primary and secondary) raters and the rest by one rater.

The first section of the instrument provided a general description of the block, including street layout, a description of people outside on the block and of non-residential land use. The second section of the procedure included a field listing of occupied household units on the block (to provide a sample frame for the rest of the environmental assessment and for the survey) and an indication of the physical attachment or detachment of each building and its approximate set back distance.

For each non-residential or mixed-use building and each of the eight randomly selected residential properties, the amount of litter in front, 'vandalism' (e.g. graffiti, broken windows), hiding places, any lack of exterior maintenance, security and alarm signs were noted. The height and occupancy of all non-residential buildings was also estimated. At just the target addresses, barriers, street and private outdoor lights, security bars on windows, evidence of dogs, places to sit outside, private and public (between street and lot) plantings (trees, garden, shrubbery) personalizations, and decorations were noted.

Survey of residents

Beginning two weeks after the environmental data collection, eight residents on each study block were interviewed in March and April 1987. The survey explored respondents' perceptions of the quality of the surrounding social and physical environment as well as many other issues relevant to the larger study, including local social support and community resources and a variety of behavioral and emotional responses to crime and victimization. Residents assessed block problems on a three-point scale (i.e. 'a big problem', 'somewhat of a problem', or 'not a problem'). The internal consistency of the total scale is alpha = 0·88 (n = 341). Individual items were used in the first two validity analyses (below). Three subscales were derived by factor analysis for use in validity analysis number three: perceived physical incivilities (vandalism, vacant housing, unkempt property, litter, vacant lots; alpha = 0·87), perceived social incivilities (harassment, teenage gangs, fights, drug dealing; alpha = 0·89), and perceived crime problems (burglary, robbery, assault; alpha = 0·73).

The entire survey took approximately 30–40 minutes to complete. The interview method—telephone

or in-person—depended upon the availability of the respondent by phone. If the respondent could not be interviewed by telephone, an interviewer was sent door-to-door to try to conduct the survey. Of the 412 interviews completed, 191 (46%) were by telephone and 221 were in-person. Out of a sample frame of 575 households where contacts were attempted, the response rate was 72%. Both the BEI and the survey were aggregated to block level ($n = 50$) for the present analyses. Two hundred and eighty three households received both an interview and environmental assessment.

Results

Inter-rater reliability

Tables 1 and 2 present means, standard deviations, and inter-rater reliability coefficients (intra-class correlations and Cronbach's alpha[5]) of the BEI items. Inter-rater agreement for block-level items was generally high (mean alpha = 0·85). There were only a few items with marginal inter-rater reliability in part due to low base rate, such as abandoned cars and trash-filled, empty lots. Although the variables 'adults walking' and 'total adults' also showed relatively weak inter-rater reliability coefficients, the variable later shown to be important in the analyses (i.e. 'males aged 10–35') is reliably assessed (alpha = 0·90). Not reported in Table 1 is the item on street layout. The most common layouts were through-straight ($n = 14$) and T-shaped ($n = 13$).

The same statistics for property-level items of the BEI appear in Table 2 and inter-rater reliabilities were again strong.[6] For the 16 items rating eight sample homes per block, both the block and household-level alpha and the more conservative intraclass correlation coefficients are reported. For most items, the coefficients were slightly higher at the block level than at the household level. At the household level, alphas range from 0·64 (vandalism/graffitti) to 0·96 (private property plantings) with a mean of 0·82. Aggregating to the block level, inter-rater alphas range from 0·79 (dilapidated exterior) to 0·99 (private plantings and private outdoor lighting) with a mean of 0·89. The inter-rater alpha for the incivilities subscale at the interval level is 0·82, for defensible space it is 0·87 and for territorial functioning it is 0·84. Based on these results, overall inter-rater reliability for the Block Environmental

TABLE 1
Block environmental inventory means and inter-rater reliability, Section I: block-level characteristics[a]

	Mean	SD	Intraclass *r*	Alpha
People observed outdoors:				
Children, <10, playing outside	0·20	0·59	0·63	0·76
Males, 10–35, 'hanging out'	0·36	1·70	0·83	0·87
walking	0·64	1·10	0·84	0·90
working	0·16	0·76	0·91	0·95
Total males, 10–35	1·21	2·10	0·85	0·90
Females, 10–35, walking	0·33	0·70	0·68	0·80
Total females, 10–35	0·39	0·77	0·81	0·88
Adults, >35, walking	0·33	0·63	0·40	0·55
Total adults	0·45	0·82	0·49	0·65
People stopping/noticing rater	1·4	1·50	0·62	0·77
Estimated % of open lot block frontage:				
unused vacant lots	0·6	1·7	0·97	0·98
parking lots	3·6	9·4	0·97	0·99
public playgrounds	1·1	4·8	0·97	0·98
public gardens	1·4	7·6	0·99	0·99
institutional yard	0·8	3·0	0·64	0·77
Total % open lots	7·4	13·5	0·96	0·97
Open lot lack of maintenance	0·24	0·37	0·43	0·60
No. of abandoned cars on street	0·31	0·83	0·53	0·63
No. 'block watch' signs	0·10	0·29	0·78	0·87
No. other signs identifying community	0·11	0·31	0·88	0·94
Street width (in lanes)	3·5	0·75	0·88	0·93
Street lights on block	4·7	2·3	0·97	0·99
Trees on street (0 = no, 1 = yes)	0·78	0·41	0·87	0·93
Section I mean:			0·78	0·85

[a] n of blocks = 45. Some low incidence items are not included in this table.

TABLE 2
Block environmental inventory means and inter-rater reliability, Sections II, III and IV: property-level characteristics

	Mean	SD	Intraclass *r*	Alpha
Section II. All properties (per block):				
Total no. of addresses	31·1	14·2	0·99	0·99
Total abandoned buildings	1·4	2·2	0·92	0·96
Total no. occupied residential units	42·5	29·8	0·94	0·97
No. of attached buildings	25·3	17·9	0·99	0·99
No. of detached buildings	5·5	9·0	0·98	0·99
No. of properties with no yard	7·9	13·3	0·87	0·93
No. of properties with <10 feet set back	5·9	11·2	0·63	0·77
No. of properties with >10 feet set back	17·1	18·4	0·89	0·94
	Section II mean:		0·90	0·94
Section III. All non-residential properties:	Mean	SD	Intraclass *r*	Alpha
No. of non-residential properties[a]	0·71	1·42	0·85	0·90
Total vacant non-residential units	0·14	0·43	0·86	0·89
Litter on/in front of non-residential property	0·39	0·92	0·82	0·87
Vandalism/graffiti on non-residential property	0·27	0·71	0·92	0·96
Non-residential dilapidation	0·44	1·0	0·90	0·92
Non-residential security or block signs	0·13	0·39	0·73	0·70
Average height (in stories) of non-residential buildings	0·71	1·1	0·97	0·99
	Section III mean:		0·86	0·89

Section IV. Sample homes[b]			Household		Block means	
	Mean	SD	IC *r*	Alpha	IC *r*	Alpha
Incivilities subscale:			0·69	0·82		
1. Litter in front of house	0·44	0·29	0·61	0·76	0·83	0·90
2. Vandalism/graffiti	0·10	0·14	0·47	0·64	0·67	0·80
3. Dilapidated exterior	0·47	0·27	0·53	0·70	0·71	0·82
Defensible space subscale:			0·76	0·87		
4. Outside visibility	0·77	0·24	0·46	0·63	0·52	0·69
5. Barrier on property	0·43	0·36	0·72	0·84	0·86	0·92
6. Barrier around property	0·18	0·22	0·73	0·84	0·80	0·89
7. Gate and whether closed	0·25	0·36	0·77	0·87	0·87	0·93
8. Public street light	0·31	0·20	0·77	0·87	0·81	0·90
9. Private outdoor light	0·61	0·40	0·90	0·95	0·98	0·99
10. Security bars on windows	0·33	0·31	0·78	0·87	0·92	0·96
Territoriality subscale:			0·73	0·84		
11. Sign of a dog	0·04	0·08	0·65	0·79	0·87	0·93
12. Place to sit outside	0·88	0·20	0·68	0·81	0·87	0·93
13. Private plantings	0·61	0·43	0·93	0·96	0·98	0·99
14. Public plantings	0·24	0·29	0·74	0·85	0·91	0·95
15. Security/watch signs	0·10	0·13	0·74	0·85	0·69	0·79
16. No. of decorations	1·43	0·90	0·76	0·86	0·74	0·84
Section IV item means:			0·70	0·82	0·81	0·89

[a] The *r* and the alpha for non-residential properties are the mean *r* and alpha of the component items (stores, offices, churches, schools, other, mixed use).
[b] The *n* of properties in Section IV is 365. The *n* of blocks is 45. Five blocks were rated by only one rater and so were excluded from this analysis.

Inventory (BEI) must be considered more than adequate.

Validity 1: Are objective and subjective physical incivilities associated?

The purpose of this analysis is to determine whether specific environmental features are reliably linked with residents' perceptions of that specific feature. Residents' subjective perceptions of block physical and social incivilities and of the seriousness of specific street crimes are based on the survey of 412 households interviewed. All BEI items were averaged across the two raters except on the five blocks where only one rater was used. Both survey and BEI items were aggregated using block level means. First, zero-order correlations were examined between objective BEI items and subjective percep-

tions of block social and physical incivilities and certain street crimes. Throughout our analyses, we also controlled for racial composition, education, home ownership, and block size in order to check for correlations that may be due to those factors. (For example, it may be that home owners or some other demographic group are more attuned to their block environment.) So, for the strongest and most consistent BEI correlates of the survey variables, first-order partials were examined and none of the correlations were significantly reduced by controlling for either number of units on the block or proportion homeowners. Any significant reductions in the size of correlations, therefore, may be attributed to the proportion of racial minority residents, average educational level and/or some combination of the four covariates.

The correlations between objective BEI physical ratings and residents' subjective perceptions of physical incivilities appear in Table 3 (with fourth-order partials in parentheses). The top of the table contains the BEI physical incivility items and so the downward diagonal represents the correlation of each resident-perceived item with its corresponding external referent, based on raters' assessment of the physical environment. The BEI physical incivilities items correlated as expected with their subjective counterparts. Litter was the strongest ($r = 0{\cdot}74$; $p < 0{\cdot}001$). Although still significant, dilapidated home exteriors was the weakest ($r = 0{\cdot}32$; $p < 0{\cdot}05$). For this and other items, slightly different definitions used by the BEI and the resident survey would tend to reduce the correlation. Although fourth-order partial correlations between objective and subjective litter and abandoned buildings are still quite strong, all correlations were somewhat

TABLE 3
Block-level correlations: objective environment and subjective physical incivilities[a]

Objective BEI ratings	Residents' subjective perceptions of physical incivilities: Litter	Vandalism	Dilapidated exterior	Vacant housing	Trashed lots
Physical incivilities:					
Litter in front of house	0·74	0·34	0·69	0·55	0·73
	(0·65)	(0·32)	(0·57)	(0·33)	(0·63)
Vandalism/graffiti	0·49	0·33	0·56	0·59	0·54
	(0·21)	(0·22)	(0·49)	(0·34)	(0·30)
Dilapidated exterior	0·49	0·22	0·32	0·33	0·40
	(0·21)	(0·06)	(0·18)	(−0·09)	(0·11)
Abandoned buildings	0·39	0·13	0·34	0·54	0·44
	(0·32)	(0·11)	(0·26)	(0·48)	(0·47)
Dilapidated vacant lot	0·41	0·21	0·36	0·46	0·57
	(0·08)	(0·06)	(0·11)	(0·20)	(0·28)
Defensible space:					
Outside visibility	0·38	0·18	0·34	0·32	0·38
	(0·27)	(0·17)	(0·23)	(0·20)	(0·24)
Barrier on property	−0·49	−0·11	−0·24	−0·35	−0·28
	(−0·28)	(0·04)	(−0·13)	(0·02)	(0·05)
Private outdoor lighting	−0·49	−0·12	−0·33	−0·31	−0·33
	(−0·43)	(−0·12)	(−0·25)	(−0·23)	(−0·14)
Public street lights	−0·44	−0·21	−0·36	−0·34	−0·42
	(−0·34)	(−0·20)	(−0·18)	(−0·18)	(−0·24)
Bars on windows	0·47	0·30	0·23	0·41	0·41
	(0·33)	(0·15)	(0·28)	(0·22)	(0·28)
Territorial functioning:					
Private plantings	−0·52	−0·16	−0·34	−0·35	−0·44
	(−0·39)	(−0·12)	(−0·22)	(−0·16)	(−0·25)
No. of decorations	−0·49	−0·17	−0·28	−0·36	−0·31
	(−0·34)	(−0·01)	(−0·19)	(−0·06)	(−0·14)

[a] n of blocks = 50. The correlations on the downward diagonal under Physical Incivilities measure the concurrent validity between the objective (BEI) and subjective (resident survey) ratings. Correlations greater than 0·28 are significant at $p < 0{\cdot}05$ (two-tailed). Fourth-order Partial Correlations controlling for block size, race, education, and home ownership appear in parentheses (df = 38). The n of blocks for two BEI items are as follows: dilapidated vacant lots ($n = 48$) and abandoned buildings ($n = 49$). Household level BEI items (Table 1, Section IV) represent block-level means based on a total of 365 different addresses and all survey items are based on 412 households. Two hundred and eighty three households received both an interview and an environmental assessment.

reduced by controlling for the demographic variables and block size. The explained variance for the five item pairs was reduced 41% from mean $r^2 = 0{\cdot}28$ to mean pr^2 (partial r^2) = 0·16.[7]

Thus, the relationship between independently observed and subjectively perceived physical incivilities appears partially explained by the demography of the block. These reductions are consistent with the findings of an earlier study by Taylor *et al.* (1985) who report significant objective physical decay correlations with socioeconomic status. In the present data, although the concurrent validity of three of the BEI incivility items is limited somewhat by partialling demographic variables, the litter and abandoned buildings partial correlations with their subjective counterparts were not significantly reduced.

Validity 2: Is the physical environment associated with perceived social incivilities and perceived crime?

Skogan (1990) and Wilson and Kelling (1982) suggest that people will make broad inferences about the presence of social and crime-related problems based on local physical incivilities. Table 4 addresses this possibility by summarizing the correlations between independently assessed environmental features and aggregated resident perceptions of social incivilities and crime-related problems. Although the correlations are again reduced when partialling racial composition, education, home ownership, and block size, the presence of independently rated physical incivilities correlates consistently with greater perceptions of various social incivilities and

TABLE 4

Block-level correlations: objective environment and subjective perceptions of social incivilities and crime[a]

Objective BEI ratings	Perceptions of social incivilities: Street harassment	Loitering teens	People fighting	Perceptions of crime: Drug dealing	Robbery	Assault
Incivilities:						
Litter in front of the house	0·54	0·57	0·69	0·62	0·32	0·42
	(0·36)	(0·28)	(0·60)	(0·41)	(0·22)	(0·25)
Vandalism/graffiti	0·58	0·65	0·55	0·58	0·47	0·65
	(0·44)	(0·43)	(0·37)	(0·35)	(0·38)	(0·55)
Non-residential dilapidation	0·43	0·33	0·27	0·47	0·43	0·57
	(0·41)	0·28)	(0·19)	(0·42)	(0·39)	(0·52)
Dilapidated vacant lot	0·39	0·42	0·37	0·51	0·35	0·40
	(0·09)	(0·08)	(0·06)	(0·27)	(0·04)	(0·11)
Abandoned buildings	0·36	0·21	0·34	0·33	0·18	0·32
	(0·36)	(0·01)	(0·23)	(0·20)	(0·21)	(0·25)
Non-resident graffiti	0·47	0·32	0·24	0·45	0·41	0·50
	(0·45)	(0·25)	(0·16)	(0·42)	(0·43)	(0·54)
Males age 10–35 'hanging out'	0·31	0·44	0·21	0·51	0·51	0·43
	(0·24)	(0·31)	(0·07)	(0·45)	(0·28)	(0·41)
Defensible space:						
Outside visibility	0·32	0·29	0·36	0·33	0·23	0·23
	(0·15)	(0·09)	(0·22)	(0·18)	(0·19)	(0·13)
Barrier on property	−0·35	−0·28	−0·28	−0·32	−0·29	−0·36
	(−0·13)	(0·07)	(0·05)	(−0·03)	(−0·18)	(−0·16)
Private outdoor lighting	−0·31	−0·23	−0·26	−0·29	−0·16	−0·23
	(−0·08)	(0·06)	(−0·05)	(−0·10)	(−0·13)	(−0·12)
Public street lights	−0·40	−0·39	−0·36	−0·32	−0·26	−0·28
	(−0·24)	(−0·07)	(−0·25)	(−0·09)	(−0·29)	(−0·19)
Bars on windows	0·26	0·15	0·16	0·18	0·34	0·39
	(0·20)	(−0·07)	(−0·05)	(−0·01)	(0·23)	(0·27)
Territorial functioning:						
Private plantings	−0·45	−0·30	−0·38	−0·34	−0·30	−0·39
	(−0·26)	(−0·00)	(−0·15)	(−0·10)	(−0·26)	(−0·27)
No. of decorations	−0·25	−0·27	−0·44	−0·43	−0·33	−0·31
	(−0·14)	(−0·07)	(−0·31)	(−0·29)	(−0·21)	(−0·13)

[a] n of blocks = 50. Correlations greater than 0·28 are significant at $p = 0{\cdot}05$ (two-tailed). Partial correlations controlling for block size, race, education, and home ownership appear in parentheses (df = 38). The n of blocks for four BEI items are as follows: dilapidated vacant lots, non-resident graffiti and dilapidation ($n = 48$); abandoned buildings ($n = 49$).

criminal activity. On blocks with more litter, residents had higher perceptions of harassment in the street ($r = 0{\cdot}54, p < 0{\cdot}001; pr = 0{\cdot}36, p < 0{\cdot}05$), loitering teens ($r = 0{\cdot}57$, $p < 0{\cdot}001$; $pr = 0{\cdot}28$, $p = 0{\cdot}10$), people fighting in the street ($r = 0{\cdot}69$, $p < 0{\cdot}001$; $pr = 0{\cdot}60$, $p < 0{\cdot}001$), and people selling drugs ($r = 0{\cdot}62, p < 0{\cdot}001; pr = 0{\cdot}41, p < 0{\cdot}01$). Graffiti and other vandalism was also related to harassment ($r = 0{\cdot}58$, $p < 0{\cdot}001$; $pr = 0{\cdot}44$, $p < 0{\cdot}01$), loitering teens ($r = 0{\cdot}65, p < 0{\cdot}001; pr = 0{\cdot}43, p < 0{\cdot}01$), people fighting in the street ($r = 0{\cdot}55$, $p < 0{\cdot}001$; $pr = 0{\cdot}37$, $p < 0{\cdot}05$), and people selling drugs ($r = 0{\cdot}58$, $p < 0{\cdot}001$; $pr = 0{\cdot}35$, $p < 0{\cdot}05$). Vandalism was also significantly related to perceptions of people getting robbed ($r = 0{\cdot}47$, $p < 0{\cdot}001$; $pr = 0{\cdot}38$, $p < 0{\cdot}05$) and assaulted ($r = 0{\cdot}65$, $p < 0{\cdot}001$; $pr = 0{\cdot}55$, $p < 0{\cdot}001$). Likewise, blocks with more young males observed 'hanging out' had greater perceptions of people selling drugs ($r = 0{\cdot}51$, $p < 0{\cdot}001$; $pr = 0{\cdot}45$, $p < 0{\cdot}01$), getting robbed ($r = 0{\cdot}31$, $p < 0{\cdot}05$; $pr = 0{\cdot}28$, $p < 0{\cdot}10$), and assaulted ($r = 0{\cdot}43$, $p < 0{\cdot}005$; $pr = 0{\cdot}41, p < 0{\cdot}01$).

Several defensible space and territorial items on the BEI correlated with resident perceptions of social incivilities and crime problems, although most correlations were substantially reduced when partialling home ownership, race, education and block size. Remaining significant after controlling for the influence of these demographic variables were the following: the number of public street lights was negatively related to perceived robberies on the block ($pr = -0{\cdot}29$, $p < 0{\cdot}05$) and the territorial marker 'yard decorations' was negatively related to the perception both of drug dealing ($pr = -0{\cdot}29$, $p < 0{\cdot}05$) and of people fighting in the street ($pr = -0{\cdot}31$, $p < 0{\cdot}05$).

Not included in Table 4 were significant negative correlations between resident perceptions of burglary as a problem on the block and, from the BEI, yard decorations ($r = -0{\cdot}34$, $p < 0{\cdot}05$) and 'block watch' signs ($r = -0{\cdot}35$, $p < 0{\cdot}05$). After partialling, these correlations remained significant ($r = -0{\cdot}28$, $p < 0{\cdot}10$, and $r = -0{\cdot}36$, $p < 0{\cdot}05$, respectively). Thus, certain features in the objectively measured social and even physical environment do appear to be associated with resident perceptions of a variety of social incivilities and crime problems. The direction of each of these associations is in the direction predicted by theories of incivilities, defensible space and territorial functioning.

Validity 3: Can objective territorial functioning and defensible space items help objective physical incivilities predict perceived incivilities and perceived crime?

The purpose of this analysis is to determine if assessed incivilities predict (a) a general perceived physical incivilities scale, (b) a general perceived social problems scale and (c) a general perceived crime problems scale. Further, if objective incivilities *can* predict these perceptions we determine whether other types of physical features, such as territorial signage or defensible space features *also* help predict these perceptions [(a), (b) and (c)] *controlling for* actual (assessed) incidence of incivilities.

Tables 5, 6 and 7 present the results of a series of

TABLE 5
Multiple regression predicting perceived physical incivilities[a]

Cluster	Variable	O-order *r*	R2 increment	Final beta	Final T value
Equation (1):					
Physical incivilities	Litter vandalism	0·76	0·39	0·50	4·6 ($p < 0{\cdot}0001$)
		0·63	0·10	0·32	3·0 ($p < 0{\cdot}005$)
Defensible space	Private outdoor lighting	−0·40	0·06	−0·24	−2·3 ($p < 0{\cdot}05$)
Adjusted R2 = 0·51 [F(3,42) = 16·6; $p = 0{\cdot}0001$]					
Equation (2):					
Physical incivilities	Litter vandalism	0·76	0·39	0·53	4·8 ($p < 0{\cdot}0001$)
		0·63	0·10	0·30	2·8 ($p < 0{\cdot}01$)
Territorial functioning	Private plantings	−0·46	0·04	−0·21	−1·9 ($p < 0{\cdot}10$)
Adjusted R2 = 0·49 [F(3,42) = 15·7; $p < 0{\cdot}0001$]					

[a] These are block-level hierarchical regressions (n of blocks = 50, df = 46) based on a partial correlation matrix (controlling for block size, race, education, and home ownership) between selected BEI items and perceived physical incivilities (vandalism, vacant housing, unkempt property, litter, and vacant lots; block-level scale alpha = 0·87).

multiple regression equations using selected BEI items to predict block-level perceptions of property incivilities, social incivilities, and crime problems. A partial correlation matrix, controlling for the possible influence of demographic variables and block size, was used to compute each equation. This method avoids the high multicollinearity and unstable results which would occur if control variables were entered directly into the regression. The degrees of freedom were reduced accordingly. With so few degrees of freedom at the block level, however, the significance criterion was raised to $p < 0{\cdot}10$ in order to preserve a moderate amount of statistical power. Thus, in each equation, territorial functioning and defensible space predictors were entered after incivilities.

Table 5 shows that the two incivilities items of litter and vandalism were the strongest predictors of perceived physical incivilities, together explaining about half the variance in the dependent variable even after controlling for the influence of demographics and block size. In addition, in separate equations, the defensible space item private outdoor lighting and the territorial functioning item private plantings also contributed significantly to the regression. As predicted, objective incivilities are positively related and defensible space and territorial functioning are negatively related to perceived physical incivilities. Therefore, controlling for block demographics, block size, and *actual* physical deterioration, territorial markers and defensible space features contribute further to explaining perceived physical deterioration. On blocks with more lighting and on blocks with more extensive private plantings, residents perceived less physical decay. Such results underscore the value of a more holistic assessment of physical environment features, drawing from several models.

The purpose of the next analysis was to see if actual incivilities, in accord with Skogan's (1990) and Wilson and Kelling's (1982) theory, contribute to perceived intensity of *social* problems, controlling for sociodemographic variables. *This aspect of their thesis has not yet been tested.* Subsequently, we wished to determine if defensible space features or territorial markers helped further explain perceived social problems.

In Table 6, litter and vandalism are again the strongest predictors of perceived social incivilities, together explaining 39% of its variance. But private plantings also contributed significantly to perceived social incivilities. Again, the direction was as hypothesized: on blocks with more plantings, fewer social problems were perceived. No defensible space items had a sufficient partial correlation coefficient to warrant consideration for this equation. This table represents a crucial test of the Skogan–Wilson–Kelling thesis: controlling for class, stability, and block size, will objectively measured physical incivilities contribute to the perception of social disorder on the block? Our analysis affirms this key linkage in the incivilities model explaining how physical deterioration may result in lowered informal social control and increased resident behavioral restriction.

Table 7 presents two equations predicting perceived crime problems. On blocks where vandalism is more extensive residents perceive more crime, explaining 20% of the variation remaining in perceived crime after controlling for education, race, home ownership and block size. Further, results *again* justify this more thorough environmental assessment: after controlling for actual incivilities, either defensible space features (window bars) or territorial functioning (private plantings) contribute to explaining perceived crime problems. In the latter case, as predicted by territorial theory (Taylor, 1988), on blocks where residents care more about outdoor spaces, as indicated by private gardening, crime problems are less severe. Residents who have exterior plantings to care for are outdoors more, and better at recognizing strangers and this may lead to

TABLE 6
Multiple regression predicting perceived social incivilities[a]

Cluster	Variable	O-order *r*	R2 increment	Final beta	Final T value
Physical incivilities	Vandalism	0·66	0·28	0·42	3·6 ($p < 0{\cdot}001$)
	litter	0·68	0·11	0·36	3·1 ($p < 0{\cdot}005$)
Territorial functioning	Public plantings	−0·26	0·07	−0·27	−2·4 ($p < 0{\cdot}05$)
Adjusted R2 = 0·51 [F(3,42) = 12·1; $p = 0{\cdot}0001$]					

[a] This is a block-level hierarchical regression (n of blocks = 50, df = 46) based on a partial correlation matrix (controlling for block size, race, education, and home ownership) between selected BEI items and perceived social incivilities (harassment, teenage gangs, fights, drug dealing; block-level scale alpha = 0·89).

TABLE 7
Multiple regression predicting perceived crime problems[a]

Cluster	Variable	O-order *r*	R2 increment	Final beta	Final T value
Equation (1):					
Physical incivilities	Vandalism	0·50	0·20	0·37	2·8 ($p < 0·01$)
Defensible space	Bars on windows	0·39	0·07	0·27	2·0 ($p < 0·10$)
Adjusted R2 = 0·23 [F(2,43) = 7·7; $p = 0·005$]					
Equation (2):					
Physical incivilities	Vandalism	0·50	0·20	0·42	3·2 ($p < 0·005$)
Territorial functioning	Private plantings	−0·27	0·06	−0·25	−1·9 ($p < 0·10$)
Adjusted R2 = 0·22 [F(2,43) = 7·5; $p < 0·005$]					

[a] These are block-level hierarchical regressions (n of blocks = 50, df = 46) based on a partial correlation matrix (controlling for block size, race, education, and home ownership) between selected BEI items and perceived crimes (burglary, robbery, assault; block-level scale alpha = 0·73).

more informal social control. In the case of window bars results are opposite to what would be expected by defensible space theory. On blocks where the bars are more prevalent, residents perceive crime problems to be *more* intense. In this case, these physical features (window bars) probably reflect reactions to past problems.

But the most important points emerging from this analysis are (1) support for key elements of Skogan's (1990) and Wilson and Kelling's (1982) thesis linking physical incivilities to perceived crime problems and (2) an indication that, controlling for actual incivilities, *other* territorial and defensible space physical features also contribute to the perception of crime problems.

Discussion

Theoretical implications

The role of the physical environment in shaping residents concerns about disorder in the urban residential environment has earned increasing attention in the last ten to 20 years. Defensible space features have been linked with fear (Newman & Franck, 1982), and territorial markers have been linked with concerns about block problems (Taylor, 1988). Most recently, Skogan (1987, 1990) and Wilson and Kelling (1982) have assigned to signs of physical deterioration a key role in the genesis of increasing fear, lessening residents' control over their own streets, and criminal invasion. Their thesis has been enormously influential in shaping a range of intervention programs (Greene & Taylor, 1988; Skogan, 1990, chapters 5 and 6). But unfortunately, tests of their thesis have generally relied upon *resident-based* measures of *perceived* incivilities. And although *actual* incivilities have been linked with fear at the neighborhood (Taylor *et al.*, 1985), block (Perkins *et al.*, 1990), and individual (Maxfield, 1987) levels, the more elementary linkage between actual incivilities and residents' perceptions of community problems has not been examined.

Our examination here first determined the concurrent validity of these physical features at the block level. Five specific physical incivilities (litter, vandalism, dilapidated exteriors, abandoned buildings, and unkempt vacant lots) account for 28% of the variance in resident perceptions of those incivilities (16% after partialling the influence of block size, education, racial composition, and home ownership). Although these correlations are significant and in some cases quite sizable they indicate that perceptions of incivilities are determined by far more than the actual incivilities themselves, or social class and stability. An important task for future researchers is to clarify these other determinants.

In addition, these results indicate that individual physical incivility items have different concurrent validities (correlations with resident perceptions), both before and after partialling for possible demographic influences. Additional theoretical work is needed to indicate why this is the case. These differential concurrent validities cannot be explained away by differential inter-rater reliabilities, since, for these five items, those reliabilities were all generally high.

These concurrent validities place limits on the extent to which actual incivilities are linked to perceived social and crime-related problems on the block. In other words, given the causal mechanism of the Skogan–Wilson–Kelling theory, the total connection between actual incivilities and perceived social and crime problems cannot exceed the relationship between actual physical incivilities and perceived physical incivilities.

But the pattern we observed here suggested that *other* causal mechanisms may be operating. The vandalism item had final betas in the regressions predicting social and crime problems which noticeably exceeded its concurrent validity coefficient. It may be that actual physical incivilities influence perceived social and crime problems via a pathway *not* mediated by residents' subjective perceptions of the feature. Further this pattern suggests that prior research relying on subjective measures of physical incivilities predicting fear or social problems may have *missed* portions of the impact of actual incivilities on perceived problems and fear of crime. Some recent work has in fact demonstrated this possibility (Covington & Taylor, 1991).

In short, the present results confirm key portions of the Skogan–Wilson–Kelling incivilities model. They also suggest that the model deserves further elaboration at both ends: the physical and the sociobehavioral. Not only may physical incivilities have unforeseen effects, but they are not the only relevant physical features in the environment of a neighborhood. Our results underscore the utility of using an integrated and interdisciplinary framework incorporating different kinds of environmental features when considering the impact of a community's physical environment on its residents. Controlling for demographics, block size and actual incivilities, defensible space features and territorial markers made additional contributions to understanding resident perceptions of crime and other social problems. Therefore, research must take a broad-gauged perspective on the contributions of the physical environment to residents' disorder-related concerns.

Methodological implications

Two important questions arise in testing any new instrument, especially one representing a new methodology: to what extent is the instrument reliable and to what extent does the instrument correlate with conceptually related variables (i.e. criterion-related validity). The BEI proved to have strong inter-rater reliability for measuring the three types of physical cues. Furthermore, many BEI items correlated significantly with resident perceptions of physical and social incivilities and criminal activity even after controlling for racial composition, education, home ownership, and block size.

Our hypotheses regarding the valence of these associations were generally supported. The two exceptions were the defensible space items of outside visibility and window bars, which were positively associated with perceived incivilities and perceived crime. Poor visibility may be spuriously related to less crime and disorder because of what is blocking the view: territorial or defensible space features such as trees and shrubbery. The likely explanation for the window bar result is that residents have them installed precisely *because* they are concerned about crime and incivilities.

Practical implications

This research has important implications for intervening to promote community development and crime prevention. Block and neighborhood associations have long been helping residents achieve feelings of security and social cohesion, even in deteriorating neighborhoods, by sponsoring cleanup and beautification programs. But the greatest justification for a more objective method of examining the crime and fear-related environment may be the need for greater *specificity* in determining exactly what aspects of the environment most affect resident perceptions and what the nature of those perceptions are. For example, litter, vandalism, and dilapidated exteriors were all associated with various perceived social incivilities and crime problems. Thus, police and community leaders and organizers might consider block clean-up activities as potentially delivering much more than merely a tidy street. Perkins *et al.* (1990) found objectively measured litter to be related, not only to crime and fear, but also less sense of community, informal social control, neighboring behavior, and block satisfaction.

The social effect of interventions in the physical environment may depend on the particular target of the intervention. Taken together, these two studies suggest that a litter reduction campaign, if effective, would be noticed and accurately perceived by residents and would perhaps lead to a greater sense of pride and ownership over outdoor spaces and, thus, to more informal social control and possible crime reduction. But the somewhat poorer concurrent validity of objective and subjective measures of vandalism and dilapidation suggests that, while

criminals might accurately perceive and select targets in part on the basis of these cues, the residents appear to be somewhat desensitized to them.

The relationship found between territorial markers (e.g. plantings and yard decorations) and lower perceived crime and disorder suggests another possible environmental avenue for crime prevention. Although some residents may decide to plant or decorate only after feeling safe enough to work outside, it seems equally plausible that manifestations of territorial privacy regulation serve to *promote* use of outdoor space and to deter crime and incivilities (Brown & Altman, 1983; Brown & Werner, 1985).

Finally, by including incivilities and territorial markers along with more fixed defensible space features, this study reveals a dimension that could be usefully added to a general model of the crime- and fear-related physical environment: that is the permanence–transience continuum (cf. Perkins *et al.*, 1990). The permanent environment includes defensible space and other features in the 'built environment' while incivilities and such territorial markers as decorations or plantings are usually more ephemeral. The practical benefit of this dimension would be its identification of those environmental features on which residents, community organizations and government programs could have an easier or greater impact.

In sum, we have developed and tested an assessment procedure for recording social and physical signs of disorder, markers of territorial functioning, and defensible space features in the urban residential environment. We have found that the environmental features assessed have generally acceptable concurrent validities, although some of these are reduced after controlling for sociodemographic features. In support of the Skogan–Wilson–Kelling thesis we have found that physical incivilities are linked to the perception of social problems and crime, thereby empirically supporting a key element in their model. Finally, we have showed that, after controlling for physical incivilities, territorial markers and defensible space features may also help predict social problems and crimes. Future work linking features of the physical environment with disorder-related psychological problems such as fear of crime, neighborhood confidence and the like would do well to consider all three classes of physical features.

Notes

(1) Portions of an earlier version of this research were presented by the second author at the annual meeting of the American Society of Criminology, November 1987, Montreal. This research was funded by grant 1-RO1-MH40842-01 from the Center on Violent and Antisocial Behavior, National Institute of Mental Health. The Principal Investigator was Ralph B. Taylor, who was also funded by grant SES-8520460 from the National Science Foundation during the conduct of this research. We thank Barbara B. Brown, David V. Perkins, and the anonymous reviewers for their helpful comments on an earlier draft. We also thank Brenda Greiner, Doris Hunt, Dr Kenneth Maton, William Sando, and Nancy Templeton for their assistance in the collection of the environmental data.

(2) Request reprints to: Douglas D. Perkins, Environment and Behavior Area, FCS Department—AEB, University of Utah, Salt Lake City, UT 84112, U.S.A.

(3) But Perkins *et al.*'s (1988) recent critique supports an expansion of behavior setting theory to include more than just regular but temporary public event/settings.

(4) All instruments are available from the authors.

(5) We computed Cronbach's alpha in this case, not as inter-*item* consistency (or how well a scale of items cluster around a particular construct) as it is usually used, but as inter-*rater* consistency (i.e. how reliably different ratings of an object agree). Alpha used this way treats each rater as a separate item in a scale.

(6) Inter-rater reliability was insufficient for the personalizations item (household-level alpha = 0·38) and so that one item was dropped.

(7) There were other significant correlations of interest in Table 3. For example, it may not be surprising that litter on or in front of residential properties was related to subjective dilapidation ($r = 0{\cdot}69$; $p < 0{\cdot}001$), vacant housing ($r = 0{\cdot}55$; $p < 0{\cdot}001$), and trash filled empty lots ($r = 0{\cdot}73$; $p < 0{\cdot}001$) or that objective vandalism and graffitti were related to subjective litter ($r = 0{\cdot}49$; $p = 0{\cdot}001$), dilapidation ($r = 0{\cdot}56$; $p < 0{\cdot}001$), vacant housing ($r = 0{\cdot}59$; $p < 0{\cdot}001$), and trashed lots ($r = 0{\cdot}54$; $p < 0{\cdot}001$). But, with regard to the rest of Table 3, two objective defensible space items (on the BEI) were associated with a perceived litter problem: outdoor visibility, operationalized as clear sight lines to and from the house ($r = 0{\cdot}38$; $p < 0{\cdot}01$), and bars on windows ($r = 0{\cdot}47$, $p < 0{\cdot}001$; see possible explanations of each in the Discussion section). And several BEI defensible space and territorial functioning items were negatively related to subjective litter: barriers (wall, fence, or hedge) *on* the property (as opposed to *around* the perimeter; $r = -0{\cdot}49$; $p < 0{\cdot}001$), private outdoor lighting ($r = -0{\cdot}49$; $p < 0{\cdot}001$), public street lights ($r = -0{\cdot}44$; $p < 0{\cdot}001$), home gardens and shrubbery ($r = -0{\cdot}52$; $p < 0{\cdot}001$), and yard decorations ($r = -0{\cdot}49$; $p < 0{\cdot}001$). The same BEI defensible space and territoriality items are similarly correlated with trash-strewn, empty lots. Although the partialling effect varied from item to item, for most of the correlations, the total variance shared between the objective environment (BEI) and subjective perceptions of physical problems was roughly halved after partialling the demographic variables and block size.

References

Barker, R. G. (1968). *Ecological Psychology: Concepts and Methods for Studying the Environment of Human Behavior.* Palo Alto: Stanford University Press.

Brown, B. B. & Altman, I. (1983). Territoriality, defensible space, and residential burglary: an environmental analysis. *Journal of Environmental Psychology*, **3**, 203–220.

Brown, B. B. & Werner, C. M. (1985). Social cohesiveness, territoriality and holiday decorations: the influence of cul-de-sacs. *Environment and Behavior*, **17**, 539–565.

Coleman, A. (1989). Disposition and situation: two sides of the same crime. In D. Evans & D. Herbert, Eds., *The Geography of Crime*, London: Routledge, pp. 108–134.

Covington, J. & Taylor, R. B. (1991). Fear of crime in urban residential neighborhoods; implications of between- and within-neighborhood sources for current metals. *Sociological Quarterly*, **32**, 231–249.

Goodman, A. C. & Taylor, R. B. (1983). *The Baltimore Neighborhood Factbook*. Baltimore, MD: The Johns Hopkins University, Center for Metropolitan Planning and Research.

Greene, J. R. & Taylor, R. B. (1988). Community-based policing and foot patrol: Issues of theory and evaluation. In J. R. Greene & S. D. Mastrofski, Eds., *Community policing: Rhetoric or reality?* New York: Praeger.

Hope, T. & Hough, M. (1988). Area, crime, and incivility: a profile from the British Crime Survey. In T. Hope & M. Shaw, Eds., *Communities and Crime Reduction*. London: H.M.S.O., p. 30–47.

Hunter, A. (1978). Symbols of Incivility. Paper presented at the annual meeting of the American Society of Criminology, Dallas, TX.

Jacobs, J. (1961). *The Death and Life of Great American Cities*. New York: Vintage.

Kish, L. (1949). A procedure for objective respondent selection within the household. *Journal of the American Statistical Association*, **44**, 380–387.

Lewis, D. A. & Maxfield, M. G. (1980). Fear in the neighborhoods: an investigation of the impact of crime. *Journal of Research and Crime and Delinquency*, **17**, 160–189.

Lewis, D. A. & Salem, G. W. (1985). *Fear of Crime: Incivility and the Production of a Social Problem*. New Brunswick, NJ: Transaction.

Maxfield, M. G. (1987). Incivilities and fear of crime in England and Wales and the United States: a comparative analysis. Paper presented at the Annual Meeting of the American Society of Criminology, Montreal.

Merry, S. E. (1981). *Urban Danger: Life in a Neighborhood of Strangers*. Philadelphia, PA: Temple University Press.

Newman, O. (1972). *Defensible Space: Crime Prevention Through Urban Design*. New York: MacMillan.

Newman, O. & Franck, K. (1982). The effects of building size on personal crime and fear of crime. *Population and Environment*, **5**, 203–220.

Perkins, D. D. (1986). The crime-related physical and social environmental correlates of citizen participation in block associations. Paper presented at the annual meeting of the American Psychological Association, Washington, D.C.

Perkins, D. D. (1990). *The social and physical environment of residential blocks, crime, and citizens' participation in block associations*. Unpublished doctoral dissertation. Department of Psychology, New York University.

Perkins, D. D., Florin, P., Rich, R. C., Wandersman, A. & Chavis, D. M. (1990). Participation and the social and physical environment of residential blocks: Crime and community context. *American Journal of Community Psychology*, **18**, 83–115.

Perkins, D. V., Burns, T. F., Perry, J. C. & Nielsen, K. P. (1988). Ecological psychology and community psychology: an analysis and critique. *Journal of Community Psychology*, **16**, 355–372.

Rapoport, A. (1982). *The Meaning of the Built Environment*. Beverly Hills, CA: Sage.

Skogan, W. G. (1990). *Disorder and Decline*. New York: Free Press.

Skogan, W. G. & Maxfield, M. G. (1981). *Coping with Crime*. Beverly Hills, CA: Sage.

Taylor, R. B. (1987). Toward an environmental psychology of disorder: Delinquency, crime, and fear of crime. In D. Stokols & I. Altman, Eds., *Handbook of Environmental Psychology*: New York: Wiley, Vol. 2, 951–986.

Taylor, R. B. (1988). *Human Territorial Functioning: An Empirical, Evolutionary Perspective on Individual and Small Group Territorial Cognitions, Behaviors and Consequences*. Cambridge, U.K.: Cambridge University Press.

Taylor, R. B. & Brower, S. (1985). Home and near home territories. In I. Altman & C. Werner, Eds., *Home environments. Human behavior and environment: Current theory and research*. New York: Plenum, Vol. 8, 183–212.

Taylor, R. B. & Gottfredson, S. D. (1986). Environmental design, crime, and prevention: an examination of community dynamics. In A. J. Reiss & M. Tonry, Eds., *Communities and Crime*. Chicago, IL: The University of Chicago Press, pp. 387–416.

Taylor, R. B., Gottfredson, S. D. & Brower, S. (1980). The defensibility of defensible space: a critical review and a synthetic framework for future research. In T. Hirschi & M. Gottfredson, Eds., *Understanding Crime*. Beverly Hills: Sage, pp. 53–71.

Taylor, R. B., Gottfredson, S. D. & Brower, S. (1984). Block crime and fear: Defensible space, local social ties, and territorial functioning. *Journal of Research in Crime and Delinquency*, **21**, 303–331.

Taylor, R. B. & Hale, M. (1986). Testing alternative models of fear of crime. *Journal of Criminal Law and Criminology*, **77**, 151–189.

Taylor, R. B., Shumaker, S. A. & Gottfredson, S. D. (1985). Neighborhood-level links between physical features and local sentiments: deterioration, fear of crime, and confidence. *Journal of Architectural Planning and Research*, **2**, 261–275.

Wilson, J. Q. & Kelling, G. L. (1982). Broken windows. *Atlantic Monthly*, **249**, 29–38.

Manuscript received 31 *July* 1990
Revised manuscript received 9 *August* 1991