Living in the urban wild woods- a case study of the ecological woodland approach to landscape planning and design at Birchwood, Warrington New Town

Volume 2

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by Anna Jorgensen
Department of Landscape
University of Sheffield

Introduction and research questions

The impact of naturalistic woody vegetation on the perception of personal safety is perhaps the single most important issue in the evaluation of this type of vegetation as a setting for housing and new settlements. This is because of the backlash against "the ecological style" amongst landscape professionals, and the views expressed in the academic literature, referred to in Chapters 1 and 2, "Introduction" and "Literature Review", above. The question of whether the standpoint of the professionals and academics accurately reflects the views of the lay public needs to be asked, and this is what this part of the research aimed to do.

As explained in Chapter 4, "History and Context", the public perception of personal security does not appear to have been an important issue for the planners and designers of Birchwood at the time of Birchwood's creation: it was seldom mentioned during the interviews that were carried out for the purposes of this study and is rarely, if ever, referred to in the literature they produced during the 1970's and 80's.

Thus the research questions that this part of the study sought to answer can be summarised as follows:

- What impact does naturalistic woodland as a setting for housing have on the public perception of personal safety at home, in residential streets and in the local area?
- How safe are local green spaces considered to be, compared with other types of urban public space?
- What is the impact of housing density on the perception of personal safety at home, in residential streets and in the local area?
- What factors are associated with feelings of personal safety in these localities?
- What are the impacts of demographic variables such as gender, age, occupation and education on the perception of personal safety in these places?

Methodology

Questionnaire design

These questions were addressed in Part 4 of the questionnaire, entitled "Safety", which contained six questions. The questions feel into two main groupings: the first three were about respondents' perception of safety during the day time; these three questions were then repeated, but this time respondents were asked about their perception of safety after dark. In each case the respondents were asked about their perception of personal safety firstly in relation to their own home and garden, then in relation to their street and finally with respect to their local area. It was considered important to make these distinctions of time and place as the evidence indicates that people's perception of safety varies widely according to whether it is light or dark, and according to geographical location (Valentine,

1989); suggesting that failure to make these distinctions would have resulted in bland generalised data.

The respondents were therefore asked (question 13):

13 How safe do you feel alone **during the daytime** in the places mentioned below? *Please tick the appropriate box to say how safe you would feel*

13 How safe do you feel alone during the daytime in the places mentioned below?	Very safe	Safe	Neither safe nor unsafe	Unsafe	Very unsafe
Your home and garden					
Your street					

In each case the respondents were asked to "tick the appropriate box to say how safe [they] would feel" using a bi-polar Likert scale consisting of five categories ranging from "very safe" to "very unsafe".

The next question (question 14) focused on the local area by asking:

14 Apart from your own home, garden and street, are there any places **in your local area** where you would feel unsafe alone **during the daytime?** *Please tick the appropriate box*

Yes ☐ No ☐

If "No", please go straight to question 16 on page 5

Finally, in question 15, respondents who had answered "yes" to the previous question were invited to identify up to three places in their local area where they would feel unsafe alone during the day time:

15 If you answered "Yes" to question 14 please identify up to 3 of these places. *Please write their names in the boxes below. Please give enough detail to enable us to find the places ourselves*

1st place
2nd place
3rd place

These three questions were then repeated with the words "after dark" substituted for "during the day time" (questions 16-18).

Data analysis

The data from questions 13 and 16 was converted in each case to an ordinal variable with values between 1 and 5 reflecting the five categories on the Likert scale, where 5 was "very safe" and 1 was "very unsafe".

The data from questions 14 and 17 was converted in each case into a nominal (binary) variable where 1 was "yes" and 2 was "no" (denoting that there were, or were not, places in the local area where the respondent would feel unsafe alone).

The replies to the open questions 15 and 18, in which the respondents were requested to identify up to three of the unsafe places they had previously referred to in questions 14 and 17, were categorised into eight categories namely: "local facilities", "roads and motorways", "built-up areas", "large built structures", "pathways, bridges and underpasses", " green spaces" and "other". Only the respondents' first named places were used, in order to simplify the analysis as much as possible. These were the same categories used to classify the places respondents disliked in the local area, with the exception of "tips, derelict land and structures", which were not identified as unsafe, and were therefore excluded as a category from the safety analysis (for a description of the categories see Chapter 7, "Place Identity", page 164). The "other" category was also slightly different: in the case of safety it was a fairly loose collection of different responses that were difficult to relate to a particular geographical location such as "anywhere for a woman alone" and "everywhere".

The data from questions 15 and 18 was converted into eight separate variables per question, details of which are set out in table 8.1: one nominal (categorical) variable with seven values reflecting each of the seven categories; and seven nominal (binary) variables where the values 1 and 2 indicated whether the respondent's reply fell within or outside of one particular category. The nominal (categorical) variable was used to compare the relative frequency with which different types of unsafe places were chosen, whereas the nominal (binary) variables were used to look at the effect of variations in the experimental or independent variables (e.g. vegetation density) on the respondent's tendency to choose each particular type of unsafe place (e.g. "roads and motorways").

Type of variable	Values represent	Number of variables
Nominal (categorical)	1="local facilities" 2="roads and motorways" 3="built-up areas" 4="large built structures" 5="pathways, bridges and underpasses" 6="green spaces" 7= "other"	1
Nominal (binary)	1= Type of place respondent considered unsafe e.g. "local facilities" 2= Where the respondent had picked one of the other six categories	7

Table 8.1 Variables relating to data from questions 15 and 18

All the variables from questions 13 to 18 were then analysed for statistical significance against vegetation and housing density, HCA, district and location in relation to Birchwood, and the demographic variables gender, age, occupation and education; except for the two nominal (categorical) variables derived from the answers to questions 15 and 18, which were only needed for a descriptive overview of this part of the data.

Four different statistical tests were used to carry out this analysis, as explained above in tables 3.8 and 3.9 (Chapter 3, "Methodology", pages 47 and 48).

Design and analysis of the in-depth interviews

The main relevance of the interviews to perception of personal safety was as an opportunity to follow up the respondents' replies to the questions in Part 4 of the questionnaire, to find out what it was about particular places that made them feel unsafe.

As previously indicated, sample interview schedules are annexed in Appendix 5 and 6, and the method of analysis of the interview data is explained above, in Chapter 3, "Methodology". page 52.

Results

Question 13- How safe do you feel alone during the day time in your home and garden?

Question 16- How safe do you feel alone after dark in your home and garden?

Differences between HCA's and districts in Birchwood and the impact of vegetation and housing density

The respondents' evaluation of their personal safety when alone in their own home and garden varied significantly according to which HCA they lived in (table 8.2). These variations were significantly correlated with the vegetation density and the housing density of the HCA's for both the day time and after dark safety ratings (table 8.2). As the correlation coefficients set out in table 8.2 show, all of these correlations were somewhat weak.

Variable	Day time or after dark	Test used	Test result
HCA	Day time	Kruskal-Wallis	Chi-Square = 30.384; df = 8; p < .0001.
Vegetation density	Day time	Spearman's correlation	r_s = -0.169; n = 263; p = 0.006.
Housing density	Day time	Spearman's correlation	r_s = -0.201; n = 263; p = 0.001.
HCA	After dark	Kruskal-Wallis	Chi-Square = 29.060; df = 8; p < .0001.
Vegetation density	After dark	Spearman's correlation	r_s = -0.178; n = 255; p = 0.004.
Housing density	After dark	Spearman's correlation	r_s = -0.162; n = 255; p = 0.009.
District	Day time	Kruskal-Wallis	Chi-square = 15.187; df = 2; p = 0.001.
District	After dark	Kruskal-Wallis	Chi-square = 13.218; df = 2; p = 0.001.

Table 8.2 Results of tests showing the effect of housing character area, vegetation density and housing density on respondents' evaluation of their personal safety in their home and garden during the day time and after dark

Housing density is (marginally) more strongly correlated with variations in feelings of personal security in the home environment during the day time, and vegetation density is (marginally) more strongly correlated with variations in feelings of personal security in the home environment after dark. There was a tendency for respondents in higher housing density HCA's to feel less safe in their own home and garden during the day time, compared to respondents from lower density areas (figure 8.1). However, as figure 8 1 shows, most of the mean safety ratings for all the HCA's fell between 4 ("safe")

and 5 ("very safe"). It was only the respondents in Nightingale (medium housing density) whose mean safety ratings fell between 3 ("neither safe nor unsafe") and 4 ("safe"). It is also noteworthy that the residents of Rawlings felt the safest when compared with the residents of the other high housing density HCA's.

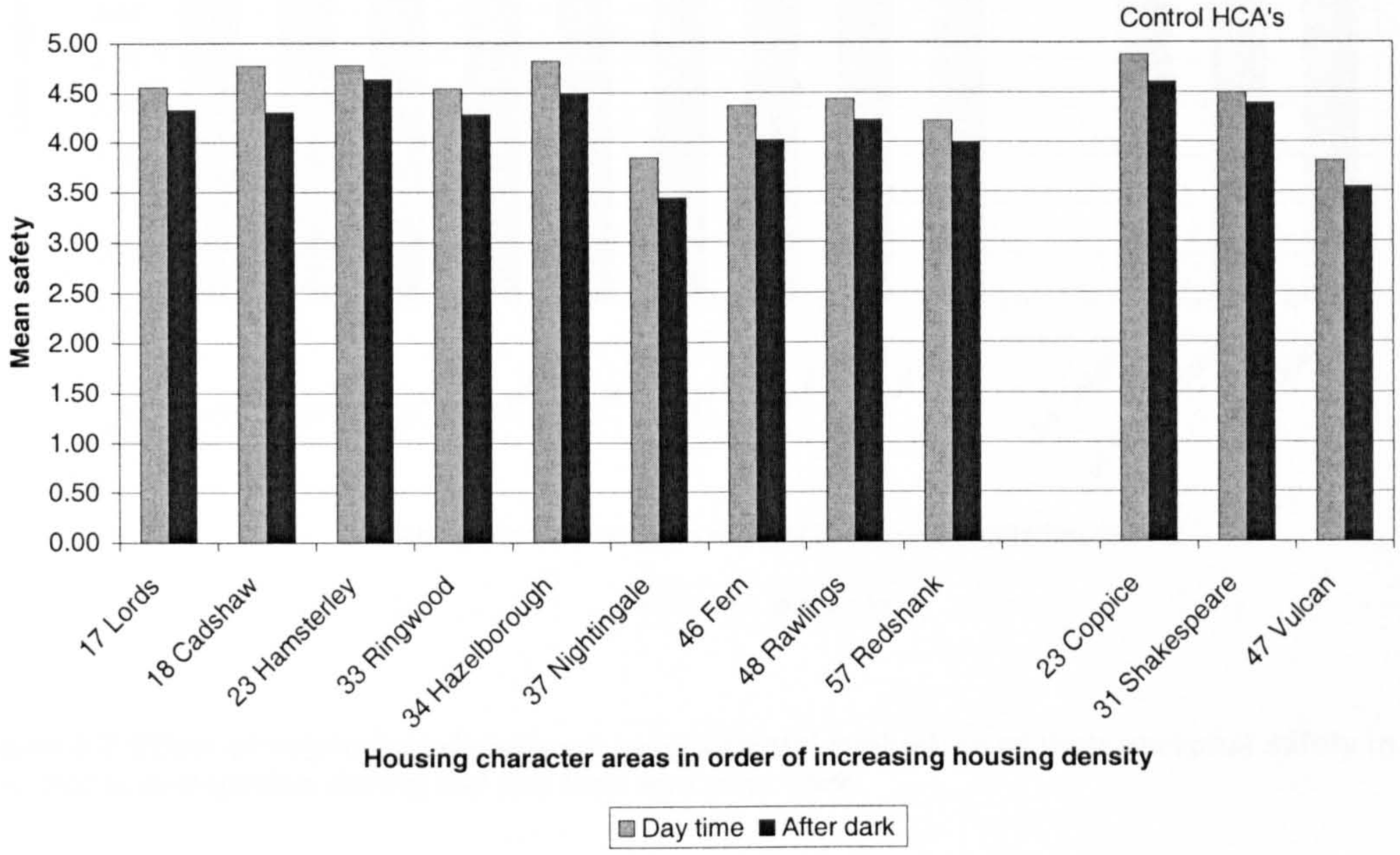

Figure 8.1 Effect of housing density on respondents' evaluation of their personal safety in their home and garden during the day time and after dark

There was a barely discernible tendency for the respondents' evaluation of their own personal security in the home environment to decline in higher vegetation density HCA's (figure 8.2). However, the negative correlation between security and high vegetation density was far from straightforward. It is apparent from figure 8.2 that the more dominant association is between security and housing density: within the low, medium and high vegetation density groupings the safety ratings are arrayed according to the housing density of each HCA, with respondents generally feeling safest in the low housing density areas, and least safe in the high housing density areas. There are only two exceptions to this pattern. In the medium vegetation density grouping Hazelborough (medium housing density) came above Cadshaw (low housing density), and in the high vegetation density grouping Rawlings (high housing density) came above Nightingale (medium housing density).

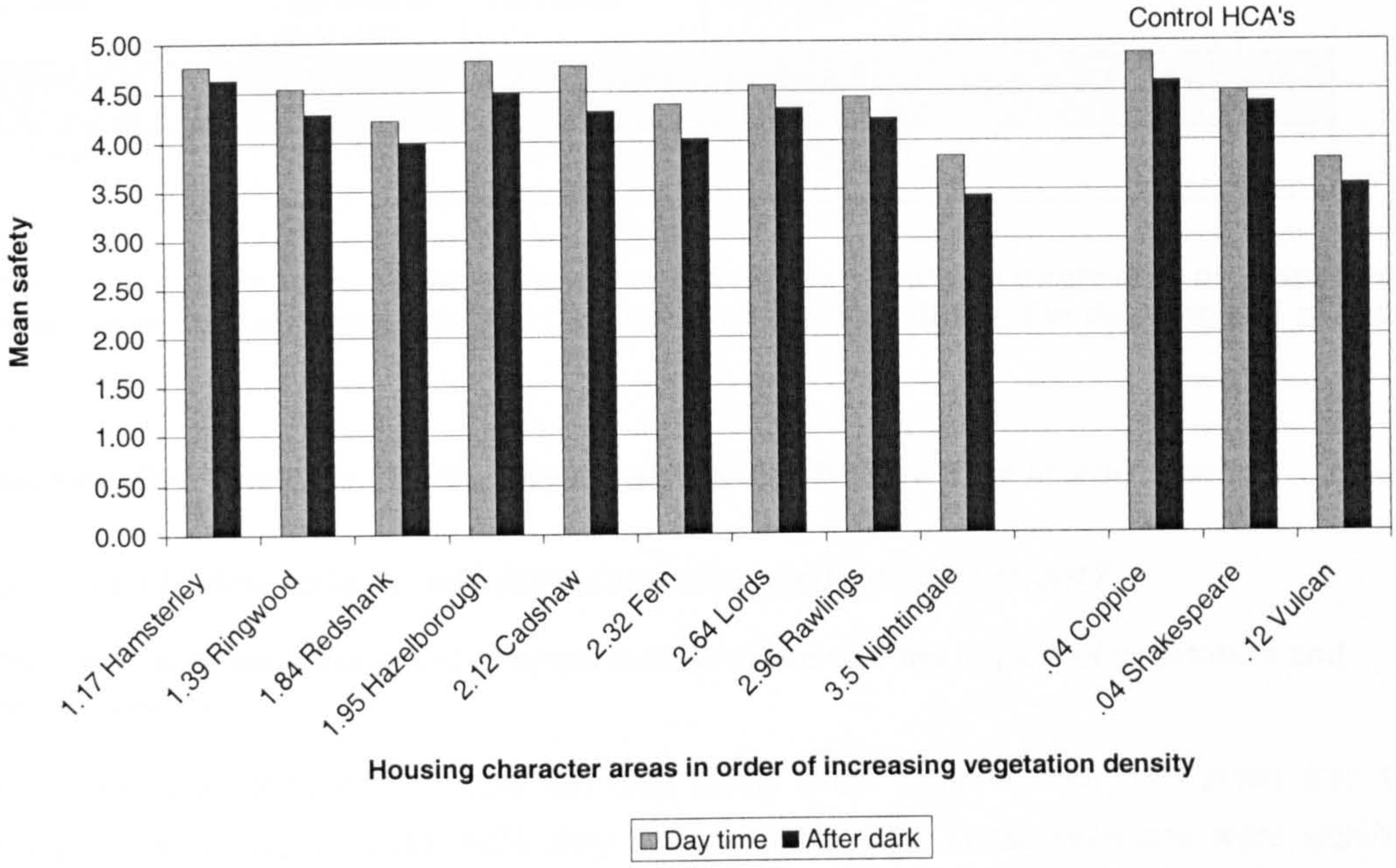

Figure 8.2 Effect of vegetation density on respondents' evaluation of their personal safety in their home and garden during the day time and after dark

	Mean safety ratings	
District	**Day time**	**After dark**
Oakwood	4.20	3.93
Locking Stumps	4.54	4.21
Gorse Covert	4.70	4.47

Table 8.3 Effect of district on respondents' evaluation of their personal safety in their home and garden during the day time and after dark

The respondents evaluation of their personal safety when alone in their own home and garden during the day time and after dark also varied significantly according to which district of Birchwood they lived in (table 8.2). There was a tendency for respondents to feel safer in their home environments in the districts that included low density HCA's, namely Locking Stumps and Gorse Covert, whereas respondents felt less safe in the district that comprised only high or medium density HCA's, namely Oakwood (table 8.3). It is noteworthy however that the respondents from Locking Stumps actually felt less safe after dark than those from Gorse Covert, suggesting that there may be special circumstances in Locking Stumps that merit further investigation.

Comparison between respondents living in Birchwood and the control group from outside

There was no significant difference between the safety ratings of the respondents from in and outside Birchwood (table 8.4). Interestingly however, the safety ratings of the three control HCA's from outside Birchwood followed the same basic pattern as those from within (figure 8.1): the respondents from the low housing density HCA felt safer in their home environment than those from the medium and high housing density HCA's.

Variable	Day time or after dark	Test used	Test result
Birchwood	Day time	Mann-Whitney	z = -0.05; NS.
Birchwood	After dark	Mann-Whitney	z = -0.465; NS.

Table 8.4 Results of tests showing the effect of living in or outside Birchwood on respondents' evaluation of their personal safety in their home and garden during the day time and after dark

Question 13- How safe do you feel alone during the day time in your street?

Question 16- How safe do you feel alone after dark in your street?

Differences between HCA's and districts in Birchwood and the impact of vegetation and housing density

The respondents' evaluation of their personal safety when alone in their own street also varied significantly according to which HCA they lived in (table 8.5). These variations were significantly correlated with both vegetation and the housing density of the HCA's for both the day time and after dark safety ratings (table 8.5). In both cases the correlations with housing density were the stronger of the two (table 8.5).

Variable	Day time or after dark	Test used	Test result
HCA	Day time	Kruskal-Wallis	Chi-Square = 45.980; df = 8; p < .0001.
Vegetation density	Day time	Spearman's correlation	r_s = -0.206; n = 257; p = 0.001.
Housing density	Day time	Spearman's correlation	r_s = -0.304; n = 257; p < .0001.
HCA	After dark	Kruskal-Wallis	Chi-Square = 42.694; df = 8; p < .0001.
Vegetation density	After dark	Spearman's correlation	r_s = -0.161; n = 254; p = 0.01.
Housing density	After dark	Spearman's correlation	r_s = -0.293; n = 254; p < .0001.
District	Day time	Kruskal-Wallis	Chi-square = 31.4; df = 2; p < .0001.
District	After dark	Kruskal-Wallis	Chi-square = 20.802; df = 2; p < .0001.

Table 8.5 Results of tests showing the effect of housing character area, vegetation density and housing density on respondents' evaluation of their personal safety in their street during the day time and after dark

As in the case of safety in the respondents' home and garden, there was a trend for respondents in higher housing density HCA's to feel less safe in their own street, both during the day time and after dark, compared to respondents from lower density areas (figure 8.3). Generally speaking, the mean safety ratings for safety in the street followed a similar pattern to the mean ratings for safety in the home and garden, but there were some interesting changes. Whereas the mean safety ratings for the low, and some of the medium housing density HCA's continued to lie between 4 ("safe") and 5 ("very safe"), the remainder had decreased markedly. With the exception of the day time safety ratings for

Fern and Rawlings, all of the mean ratings for the high housing density HCA's (Fern, Rawlings and Redshank) now lay between 3 ("neither safe nor unsafe") and 4 ("safe"). The position with regard to the medium density HCA's had also altered. Nightingale's mean rating for safety in the street after dark now lay below 3 ("neither safe nor unsafe") suggesting that the majority of respondents from Nightingale do not feel safe alone in their street after dark.

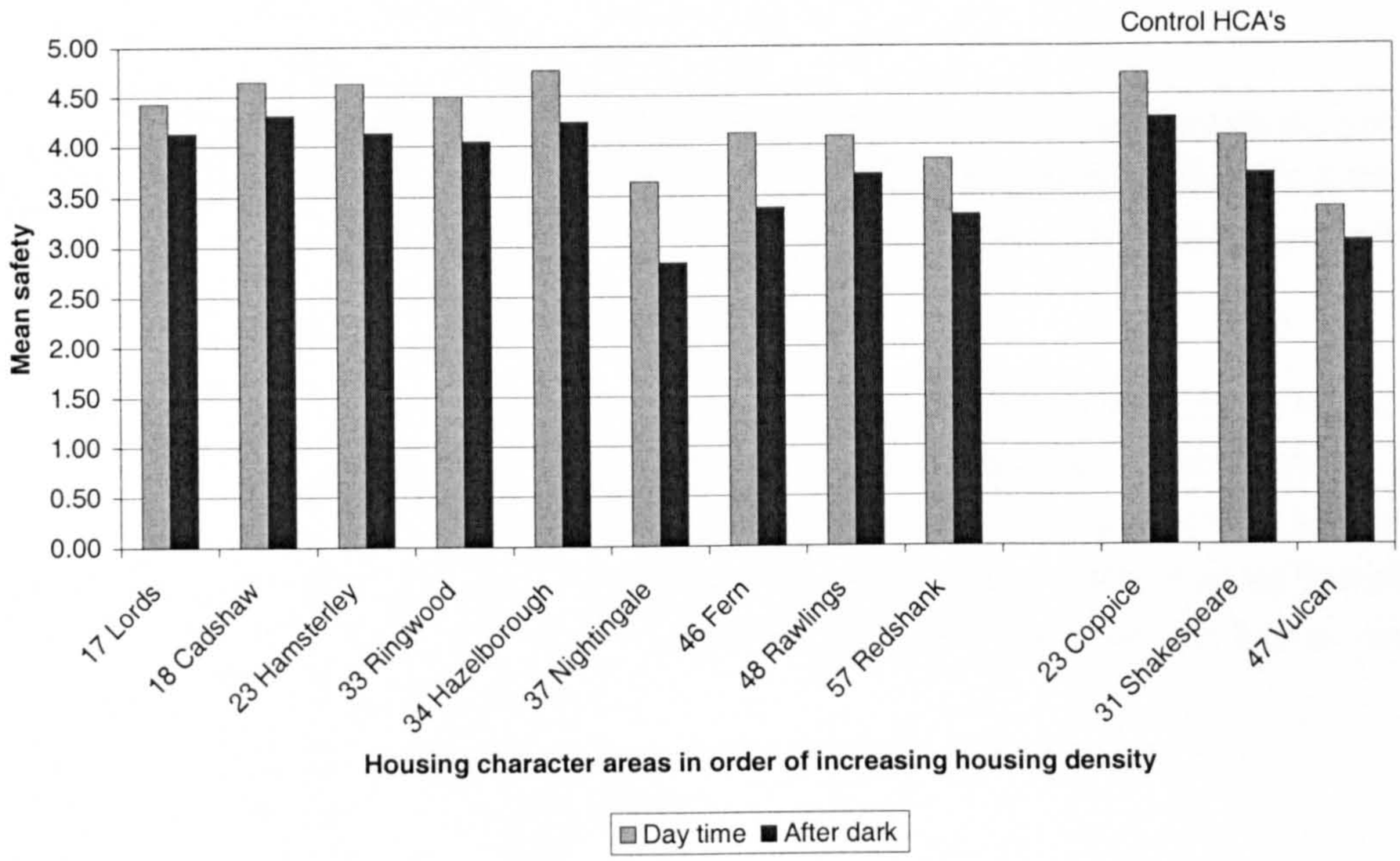

Figure 8.3 Effect of housing density on respondents' evaluation of their personal safety in their street during the day time and after dark

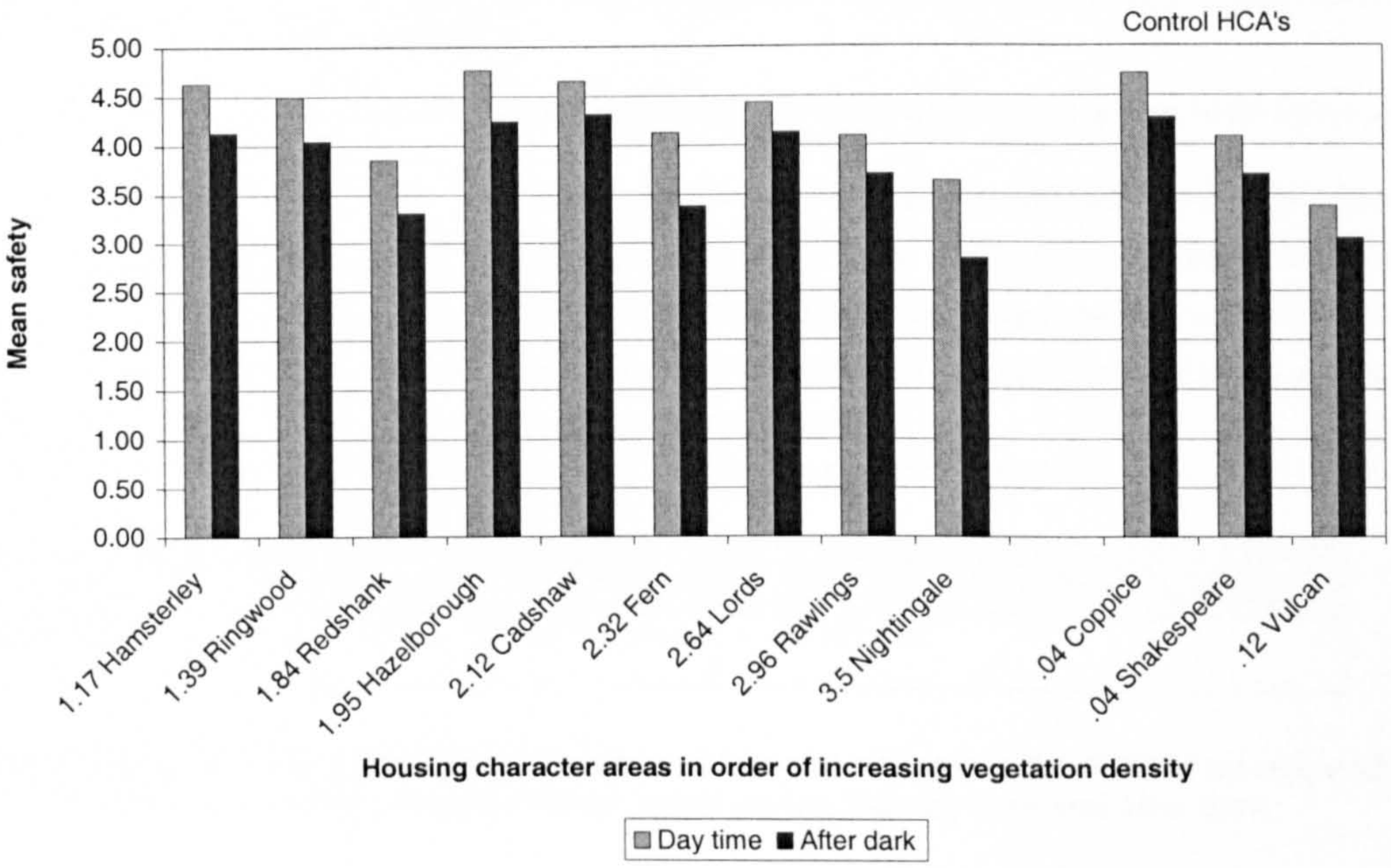

Figure 8.4 Effect of vegetation density on respondents' evaluation of their personal safety in their street during the day time and after dark

The respondents' evaluation of their own personal security in their street also declined in higher vegetation density HCA's but the correlations were weak, and once again the more dominant relationship was with housing density (figure 8.4). As in the case of safety in the home and garden, the safety ratings within each vegetation density grouping (low, medium and high) varied according to housing density. Respondents from low housing density HCA's felt safest, and those from high housing density HCA's felt least safe.

Again, there were the same two exceptions to this pattern. In the medium vegetation density grouping Hazelborough (medium housing density) came above Cadshaw (low housing density), and in the high vegetation density grouping Rawlings (high housing density) came above Nightingale (medium housing density).

The respondents' evaluation of their personal safety when alone in their own street during the day time and after dark also varied significantly according to which district they lived in (table 8.5). As in the case of safety in the home and garden, there was a clear tendency for respondents to feel safer in their home environments in the districts that included low density HCA's, namely Locking Stumps and Gorse Covert, whereas respondents felt less safe in the district that comprised only high or medium density HCA's, namely Oakwood (table 8.6).

	Mean safety ratings	
District	**Day time**	**After dark**
Oakwood	3.88	3.32
Locking Stumps	4.38	3.89
Gorse Covert	4.62	4.14

Table 8.6 Effect of district on respondents' evaluation of their personal safety in their street during the day time and after dark

Comparison between respondents living in Birchwood and the control group from outside

On the other hand, whether the respondents lived in or outside Birchwood had no significant impact on their feelings of personal safety in their street (table 8.7). Once again, however, the safety ratings of the three control HCA's from outside Birchwood followed the same basic pattern as those from within (figure 8.4): the respondents from the low housing density HCA felt safer in their home environment than those from the medium and high housing density HCA's.

Variable	**Day time or after dark**	**Test used**	**Test result**
Birchwood	Day time	Mann-Whitney	z = -1.067; NS.
Birchwood	After dark	Mann-Whitney	z = -0.227; NS.

Table 8.7 Results of tests showing the effect of living in or outside Birchwood on respondents' evaluation of their personal safety in their street during the day time and after dark

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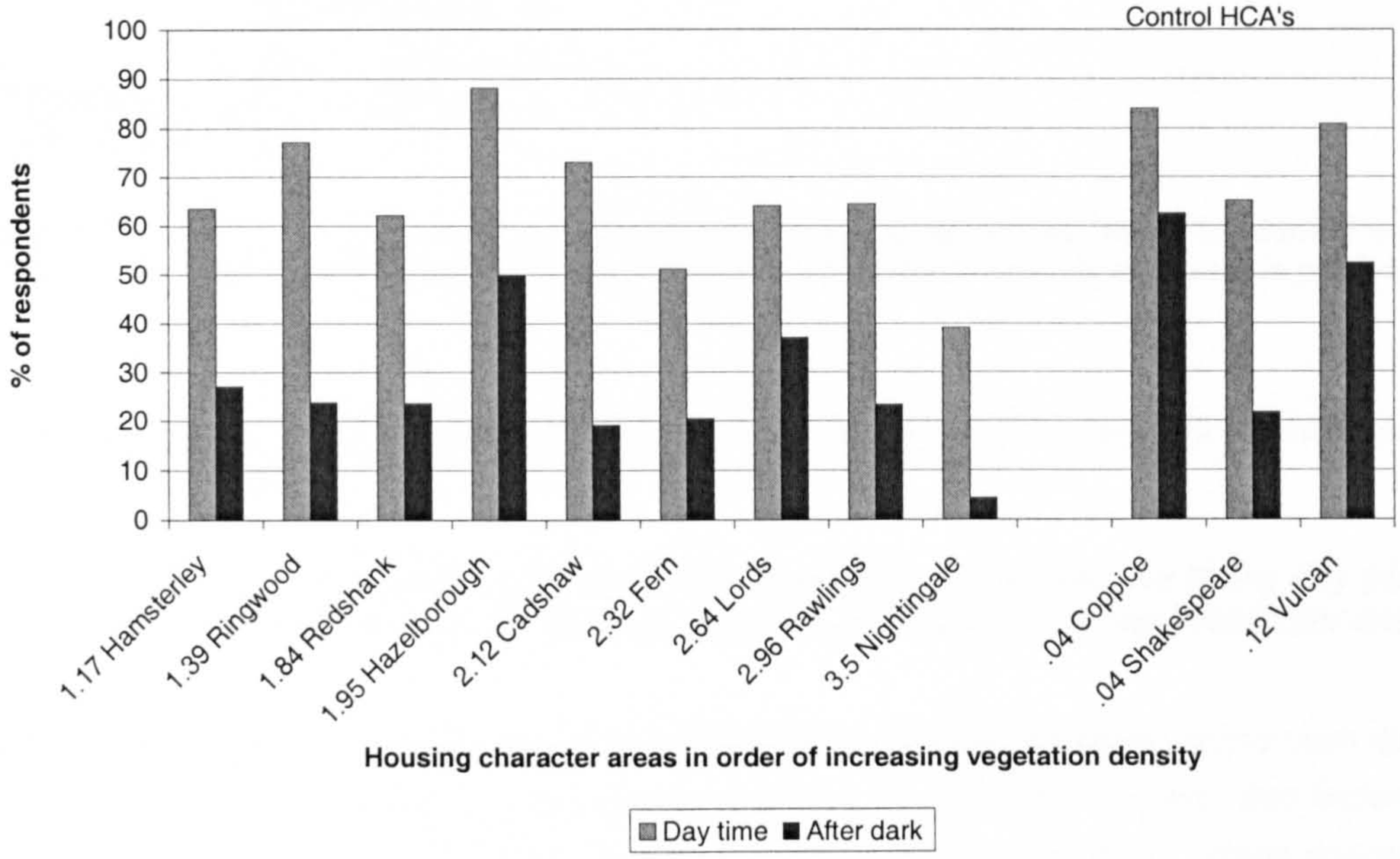

Figure 8.5 Effect of vegetation density on respondents' tendency to identify unsafe places in the local area (bar chart shows respondents who did NOT identify any unsafe places)

The district of Birchwood in which the respondents lived had no significant impact on their tendency to identify unsafe places in their local area (table 8.8).

Comparison between respondents living in Birchwood and the control group from outside

Whilst living in or outside Birchwood had no impact on the respondents' perception of safety in their home, garden and street the respondents' tendency to identify unsafe places in their local area did vary significantly according to this factor (table 8.9).

Variable	Day time or after dark	Test used	Test result	Exact significance= E Monte Carlo significance= MC
Birchwood	Day time	Chi-square	$x^2 = 4.444$; df = 1; p = 0.035.	
Birchwood	After dark	Chi-square	$x^2 = 11.076$; df = 1; p = 0.001.	

Table 8.9 Results of tests showing the effect of living in or outside of Birchwood on respondents' tendency to identify unsafe places in their local area, during the day time and after dark

Essentially, respondents were less likely to identify unsafe places in their local area if they lived outside Birchwood (table 8.10). Consequently, the three control HCA's from outside Birchwood performed quite differently, when compared to the Birchwood HCA's (figure 8.5). Respondents from Coppice (low housing density) had the highest safety ratings out of all the low housing density HCA's. Shakespeare (medium housing density) had the second lowest safety ratings out of the medium density HCA's. Respondents from Vulcan, on the other hand, not only had the highest safety ratings of any high housing density HCA, but also had higher safety ratings than every other medium and low housing density HCA, with the exception of Hazelborough (medium housing density) and Coppice (low housing density).

	Day time	After dark
	%	%
In Birchwood	63	25
Outside Birchwood	77	46

Table 8.10 Effect of living in or outside Birchwood on respondents' tendency to identify unsafe places in the local area (table shows respondents who did NOT identify any unsafe places)

Questions 15 and 18- If you answered "Yes" to question [14/17] please identify up to three of these places.

(Question [14/17]- Apart from your own home, garden and street, are there any places in your local area where you would feel unsafe alone during the day time/after dark?)

As described in the "methodology" section in this chapter (page 197), the replies to this open question were categorised into seven separate categories namely "local facilities", "roads and motorways", "built-up areas", "large built structures", "pathways, bridges and underpasses", "green spaces" and "other".

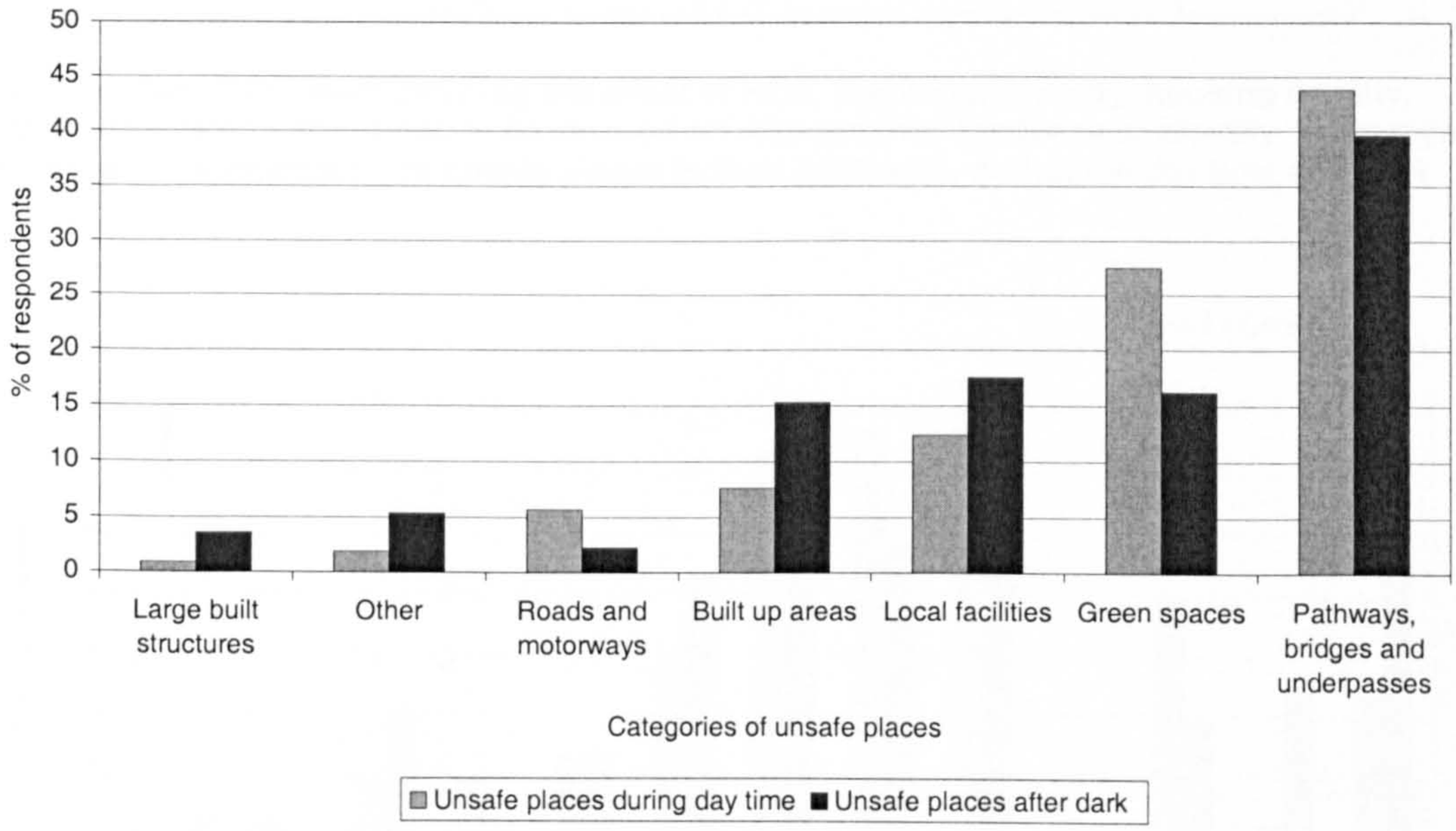

Figure 8.6 Respondents' choice of unsafe places in their local area

Figure 8.6 shows that most respondents were likely to identify "pathways, bridges and underpasses" as unsafe, both during the day time and after dark. "Green spaces" were also widely thought to be unsafe during the day time. Around 15% of respondents felt that "local facilities", "built up areas" and "green spaces" were unsafe after dark.

The results for "large built structures", "other" and "roads and motorways" are not reported in any further detail, as the numbers of respondents choosing these categories was so small that there are unlikely be any significant trends in the data.

"Pathways, bridges and underpasses"

The respondents' tendency to identify "pathways, bridges and underpasses" as unsafe places in their local area varied significantly according to which HCA and district they lived in, both during the day time and after dark (table 8.11).

Variable	Day time or after dark	Test used	Test result	Exact significance= E Monte Carlo significance= MC
HCA	Day time	Chi-square	$x^2 = 27.688$; df = 8; p < .0001.	MC
Vegetation density	Day time	Mann-Whitney	z = -0.249; NS.	
Housing density	Day time	Mann-Whitney	z = -1.687; NS.	
District	Day time	Chi-square	$x^2 = 26.202$; df = 2; p < .0001.	MC
Birchwood	Day time	Chi-square	$x^2 = 2.089$; df = 1; NS.	
HCA	After dark	Chi-square	$x^2 = 37.281$; df = 8; p < .0001.	MC
Vegetation density	After dark	Mann-Whitney	z = -1.122; NS.	
Housing density	After dark	Mann-Whitney	z = -0.171; NS.	
District	After dark	Chi-square	$x^2 = 30.387$; df = 2; p < .0001.	
Birchwood	After dark	Chi-square	$x^2 = 0.010$; df = 1; NS.	

Table 8.11 Results of tests showing the effect of HCA, vegetation density, housing density, district and living in or outside of Birchwood on respondents' tendency to identify "pathways, bridges and underpasses" as unsafe places in their local area, during the day time and after dark.

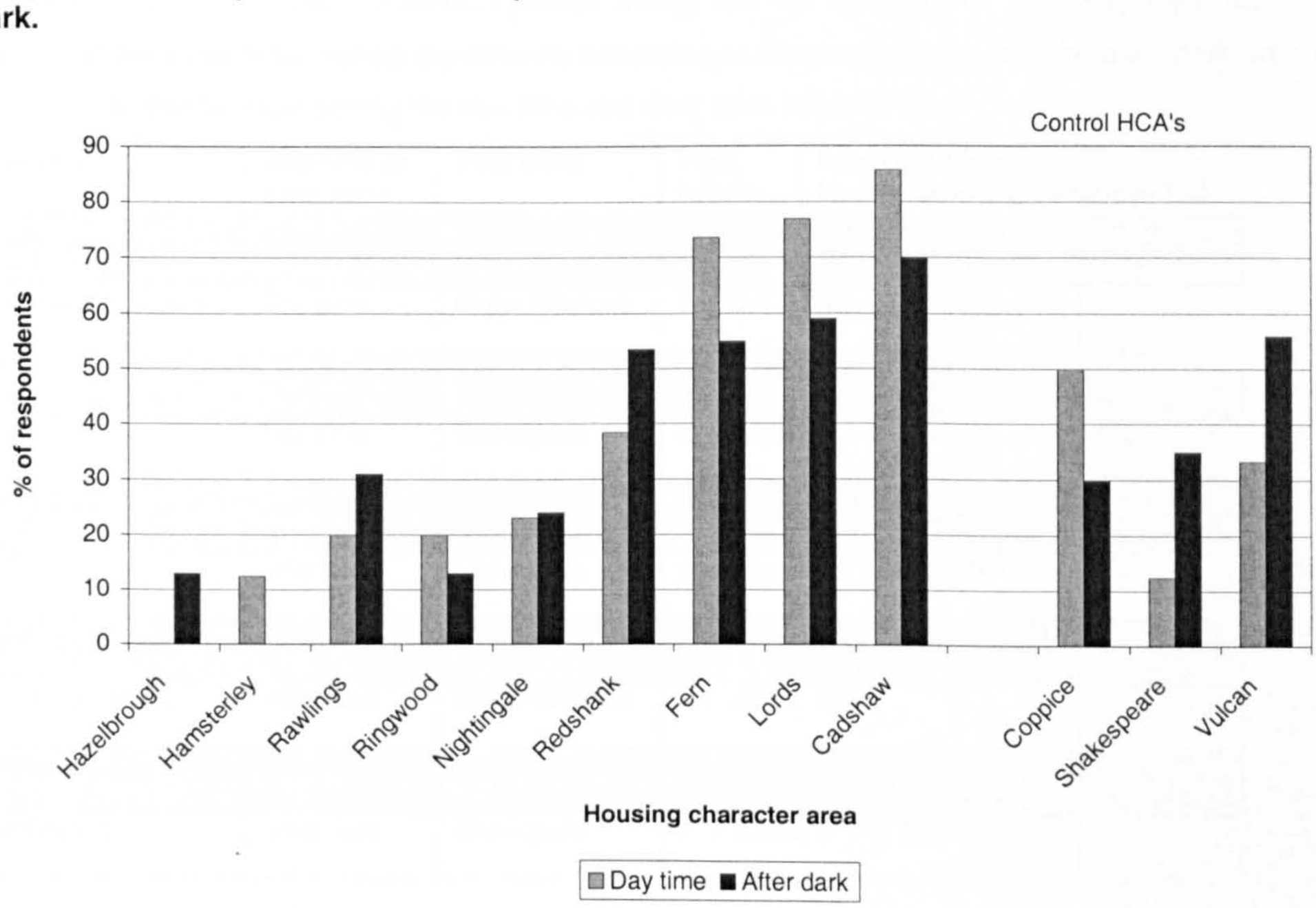

Figure 8.7 Effect of HCA on respondents' tendency to identify "pathways, bridges and underpasses" as unsafe places in the local area during the day time and after dark

These variations between HCA's cannot be explained by factors such as vegetation density. Although there were some HCA's and districts where "pathways, bridges and underpasses" were considered unsafe by proportionately more respondents, greater numbers of respondents from nearly all HCA's felt that these places were unsafe, both during the day time and after dark (figure 8.7), compared to respondents who identified other kinds of unsafe places. It was however striking that respondents from the three HCA's in Locking Stumps (Fern, Lords and Cadshaw) were the most likely to pick "pathways, bridges and underpasses" as unsafe places in the local area, during the day time and after dark (table 8.12).

	Day time	After dark
District	%	%
Gorse Covert	13	8
Oakwood	28	37
Locking Stumps	77	61

Table 8.12 Effect of district on respondents' tendency to identify "pathways, bridges and underpasses" as unsafe places in the local area during the day time and after dark

In addition, it is noteworthy that these types of places were also considered unsafe by respondents from outside Birchwood: there was no significant difference between the data from inside and outside Birchwood in this instance (table 8.11).

"Green spaces"

The respondents' tendency to identify places falling into the category of "green spaces" as unsafe places in their local area, varied significantly according to which HCA they lived in, after dark only, and according to district, both during the day time and after dark (table 8.13).

Variable	Day time or after dark	Test used	Test result	Exact significance= E Monte Carlo significance= MC
HCA	Day time	Chi-square	$x^2 = 12.603$; df = 8; NS.	
Vegetation density	Day time	Mann-Whitney	z = -0.478; NS.	
Housing density	Day time	Mann-Whitney	z = -0.560; NS.	
District	Day time	Chi-square	$x^2 = 8.007$; df = 2; p = 0.02.	MC
Birchwood	Day time	Chi-square	$x^2 = 0.008$; df = 1; NS.	
HCA	After dark	Chi-square	$x^2 = 32.614$; df = 8; p < .0001.	MC
Vegetation density	After dark	Mann-Whitney	z = -3.461; p = 0.001.	
Housing density	After dark	Mann-Whitney	z = -0.662; NS.	
District	After dark	Chi-square	$x^2 = 29.435$; df = 2; p < .0001.	
Birchwood	After dark	Chi-square	$x^2 = 3.594$; df = 1; NS.	

Table 8.13 Results of tests showing the effect of HCA, vegetation density, housing density, district and living in or outside of Birchwood on respondents' tendency to identify "pathways, bridges and underpasses" as unsafe places in their local area, during the day time and after dark.

Although it appears that respondents from lower vegetation density HCA's were more likely to identify "green spaces" as unsafe, this apparent association may de due to greater numbers of respondents from HCA's in Gorse Covert (all low or medium vegetation density HCA's) identifying "green spaces" as unsafe, compared to respondents from other HCA's (figure 8.8 and table 8.14).

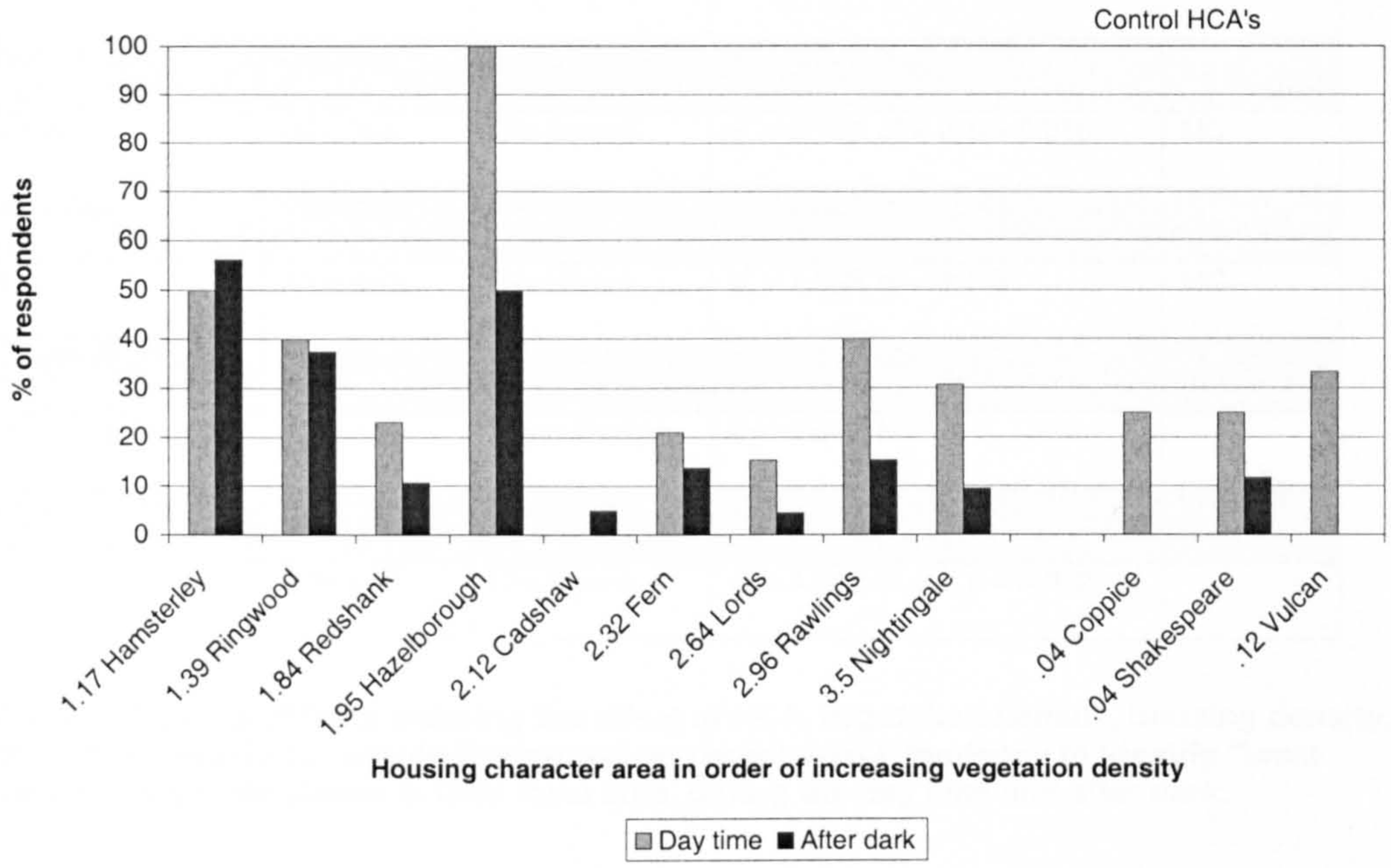

Figure 8.8 Effect of HCA on respondents' tendency to identify "green spaces" as unsafe places in the local area during the day time and after dark

	Day time	After dark
District	%	%
Locking Stumps	15	8
Oakwood	31	12
Gorse Covert	53	48

Table 8.14 Effect of district on respondents' tendency to identify "green spaces" as unsafe places in the local area during the day time and after dark

"Local facilities"

The respondents' tendency to identify "local facilities" (e.g. local shops and pubs) as unsafe places in their local area varied significantly according to which HCA they lived in, during the day time but not after dark (table 8.15). During the day time respondents from higher vegetation density HCA's were significantly more likely to identify "local facilities" as unsafe places in their local areas (table 8.15 and figure 8.9). However, the association between higher vegetation densities and the tendency to identify "local facilities" as unsafe is not straightforward: as figure 8.9 shows there are some anomalies. Two of the HCA's from Gorse Covert (Ringwood and Hazelborough), and one HCA from Oakwood (Redshank) have higher proportions of respondents picking "local facilities" than their vegetation density would predict.

Variable	Day time or after dark	Test used	Test result	Exact significance= E Monte Carlo significance= MC
HCA	Day time	Chi-square	x^2 = 21.624; df = 8; p = 0.007.	MC
Vegetation density	Day time	Mann-Whitney	z = -2.284; p = 0.022.	
Housing density	Day time	Mann-Whitney	z = -0.761; NS.	
District	Day time	Chi-Square	x^2 = 8.155; df = 2; p = 0.016.	MC
Birchwood	Day time	Chi-square	x^2 = 0.527; df = 1; NS.	
HCA	After dark	Chi-square	x^2 = 7.538; df = 8; NS.	MC
Vegetation density	After dark	Mann-Whitney	z = -1.797; NS.	
Housing density	After dark	Mann-Whitney	z = -1.542; NS.	
District	After dark	Chi-Square	x^2 = 2.399; df = 2; NS.	
Birchwood	After dark	Chi-square	x^2 = 4.281; df = 1; p = 0.039.	

Table 8.15 Results of tests showing the effect of HCA, vegetation density, housing density, district and living in or outside Birchwood on respondents' tendency to identify "local facilities" as unsafe places in their local area, during the day time and after dark.

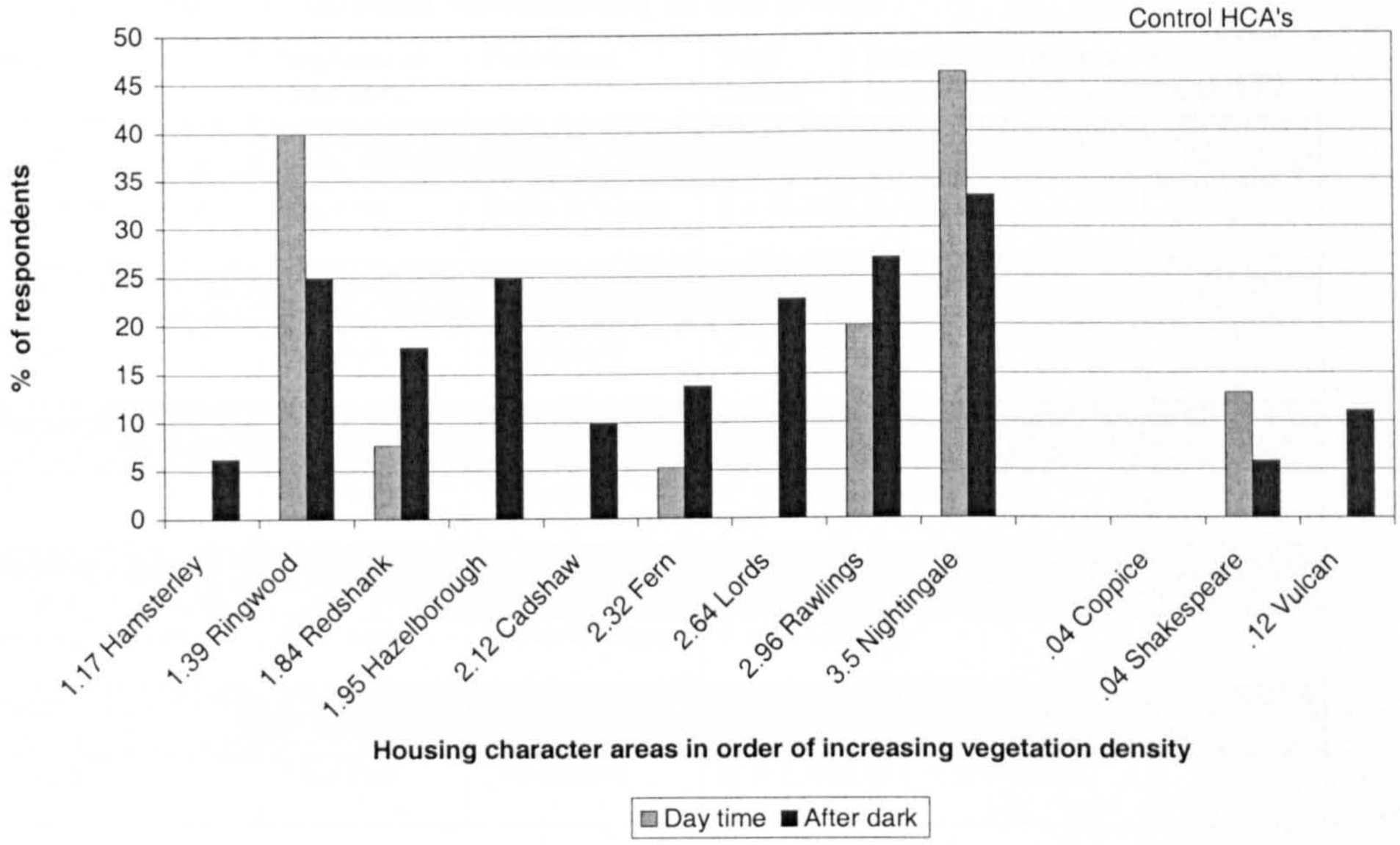

Figure 8.9 Effect of vegetation density on respondents' tendency to identify "local facilities" as unsafe places in the local area

There was a significant association between the district of Birchwood the respondents lived in and their tendency to pick "local facilities" as unsafe places in their local area, during the day time but not after dark (table 8.15). Respondents from Oakwood and Gorse Covert were more likely to pick "local facilities" compared to respondents from Locking Stumps (table 8.16).

Respondents from Birchwood were significantly more likely to pick "local facilities" than the respondents from the control areas outside Birchwood after dark, but not during the day time (table 8.15). Twenty per cent of the Birchwood respondents who answered this question thought that "local facilities" were unsafe after dark, compared to only 6% of respondents from outside Birchwood.

	Day time
District	%
Locking Stumps	3
Gorse Covert	13
Oakwood	25

Table 8.16 Effect of district on respondents' tendency to identify "local facilities" as unsafe places in the local area during the day time

"Built-up areas"

The respondents' tendency to pick "built-up areas" (i.e. whole areas or districts that respondents identified as being unsafe) as unsafe places in their local area, varied significantly according to which HCA they lived in, during the day time but not after dark (table 8.17). Respondents from lower vegetation density HCA's were significantly more likely to identify "built-up areas" as unsafe during the day time, but not after dark (table 8.17 and figure 8.10); as were respondents from HCA's with lower housing densities (table 8.17 and figure 8.11). However, as respondents from only two HCA's in Birchwood picked "built-up areas" no trends can be said to exist.

Variable	Day time or after dark	Test used	Test result	Exact significance= E Monte Carlo significance= MC
HCA	Day time	Chi-square	$x^2 = 24.115$; df = 8; p = 0.007.	MC
Vegetation density	Day time	Mann-Whitney	z = -2.126; p = 0032.	
Housing density	Day time	Mann-Whitney	z = -1.948; p = 0051.	
District	Day time	Chi-square	$x^2 = 10.546$; df = 2; p = 0.015.	MC
Birchwood	Day time	Chi-square	$x^2 = 9.021$; df = 1; p = 0.014.	E
HCA	After dark	Chi-square	$x^2 = 7.905$; df = 8; NS.	
Vegetation density	After dark	Mann-Whitney	z = -0.995; NS.	
Housing density	After dark	Mann-Whitney	z = -0.123; NS.	
District	After dark	Chi-square	$x^2 = 5.461$; df = 2; NS.	
Birchwood	After dark	Chi-square	$x^2 = 5.145$; df = 1; p = 0.023.	

Table 8.17 Results of tests showing the effect of HCA, vegetation density, district and living in or outside of Birchwood on respondents' tendency to identify "built-up areas" as unsafe places in their local area, during the day time and after dark.

The respondents' propensity to identify "built up areas" as unsafe places in their local area during the day time also varied significantly according to which district in Birchwood they lived in (table 8.17).

Twenty per cent of respondents from Gorse Covert who answered this question picked "built-up areas", compared to only 3% from Locking Stumps and none from Oakwood.

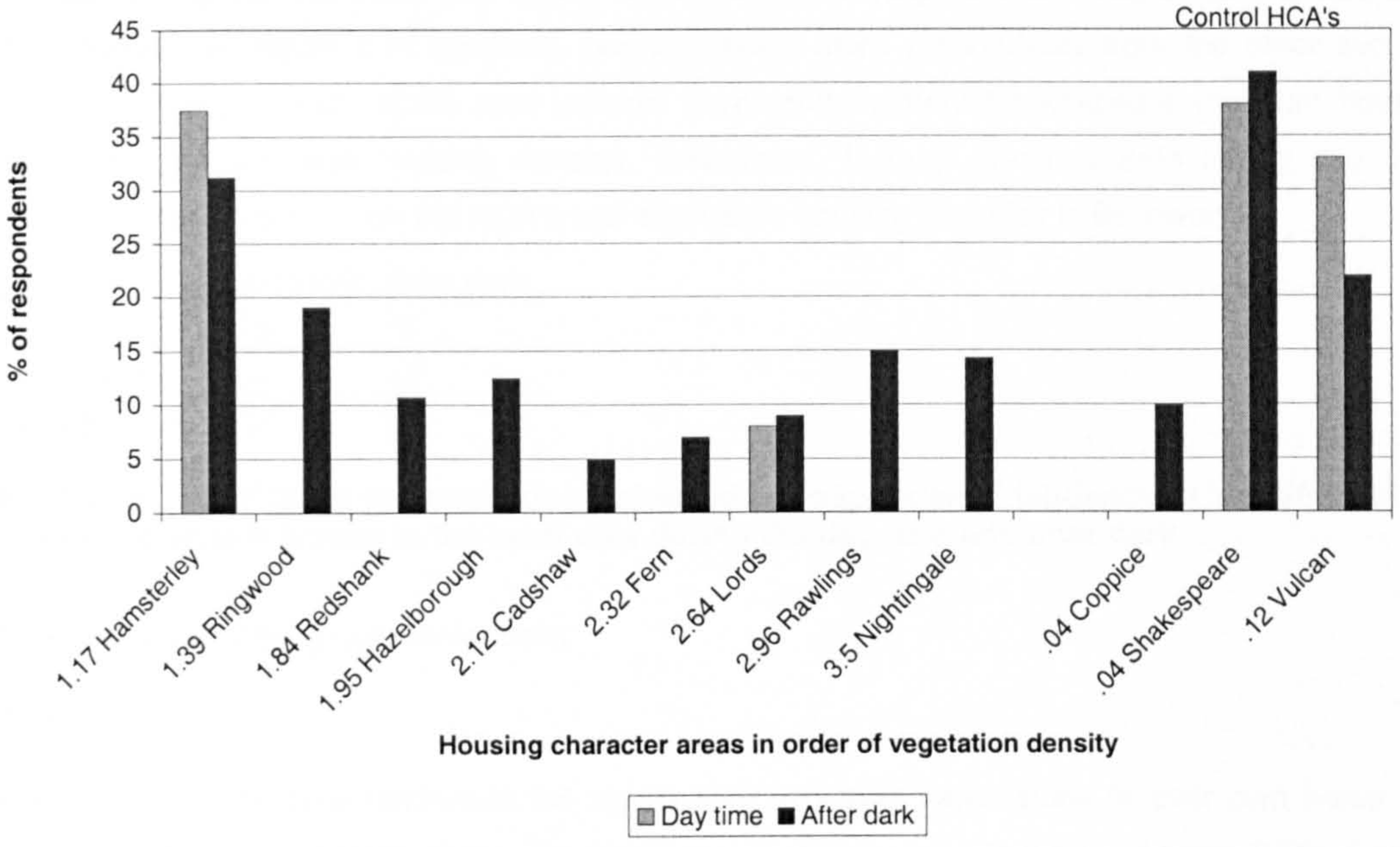

Figure 8.10 Effect of vegetation density on respondents' tendency to identify "built-up areas" as unsafe places in the local area

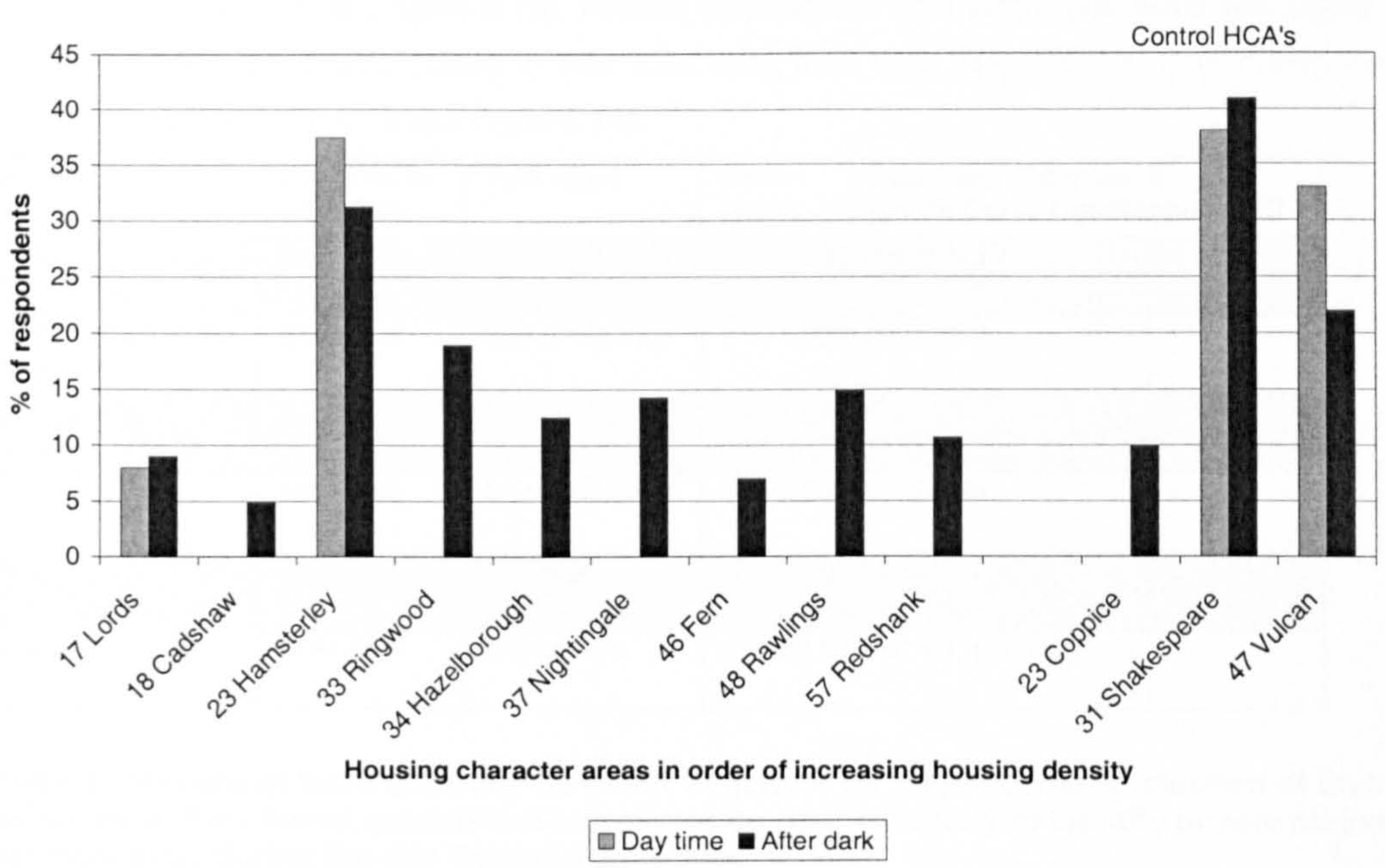

Figure 8.11 Effect of housing density on respondents' tendency to identify "built-up areas" as unsafe places in the local area

It is noteworthy that significantly more respondents from outside Birchwood found "built-up areas" to be unsafe compared to respondents from Birchwood itself (tables 8.17 and 8.18). Respondents from

Coppice (the low vegetation density control HCA from outside Birchwood) were a marked exception to this trend (figure 8.11). None of the respondents from this HCA regarded "built-up areas" in the locality as unsafe during the day time, and only a small number of respondents thought them unsafe after dark. However, as figure 8.11 confirms, proportionately more respondents from the other two low vegetation density control HCA's from outside Birchwood, namely Shakespeare (medium housing density) and Vulcan (high housing density), considered "built-up areas" unsafe during day time, compared to respondents from the HCA's with equivalent housing densities in Birchwood.

	Day time	After dark
	%	%
In Birchwood	4	13
Outside Birchwood	27	28

Table 8.18 Effect of living in or outside Birchwood on respondents' tendency to identify "built up areas" as unsafe places in the local area during the day time and after dark

The impact of demographic factors

Gender

Female respondents from Birchwood felt significantly less safe when alone in their own home and garden than male respondents, during the day time and after dark (table 8.19 and figure 8.12). Gender also had an impact on female respondents' evaluation of their personal safety in the street, during the day time but not after dark, with female respondents feeling significantly more fearful than male respondents (table 8.19 and figure 8.13). Female respondents from Birchwood were also significantly more likely to identify unsafe places in their local area than male respondents, both during the day time and after dark (table 8.19 and figure 8.14).

Variable	Day time or after dark	Test used	Test result	Exact significance= E Monte Carlo significance= MC
Safety in own home and garden	Day time	Mann-Whitney	z = -2.494; p = 0.013.	
Safety in own home and garden	After dark	Mann-Whitney	z = -3.058; p = 0.002.	
Safety in street	Day time	Mann-Whitney	z = -1.944; NS.	
Safety in street	After dark	Mann-Whitney	z = -2.230; p = 0.026.	
Safety in local area	Day time	Chi-square	x^2 = 24.667; df = 1; p < .0001.	
Safety in local area	After dark	Chi-square	x^2 = 13.674; df = 1; p < .0001.	

Table 8.19 Results of tests showing the effect of gender on respondents' evaluation of their own safety in their home, garden and street, and on their tendency to identify unsafe places in their local area, during the day time and after dark.

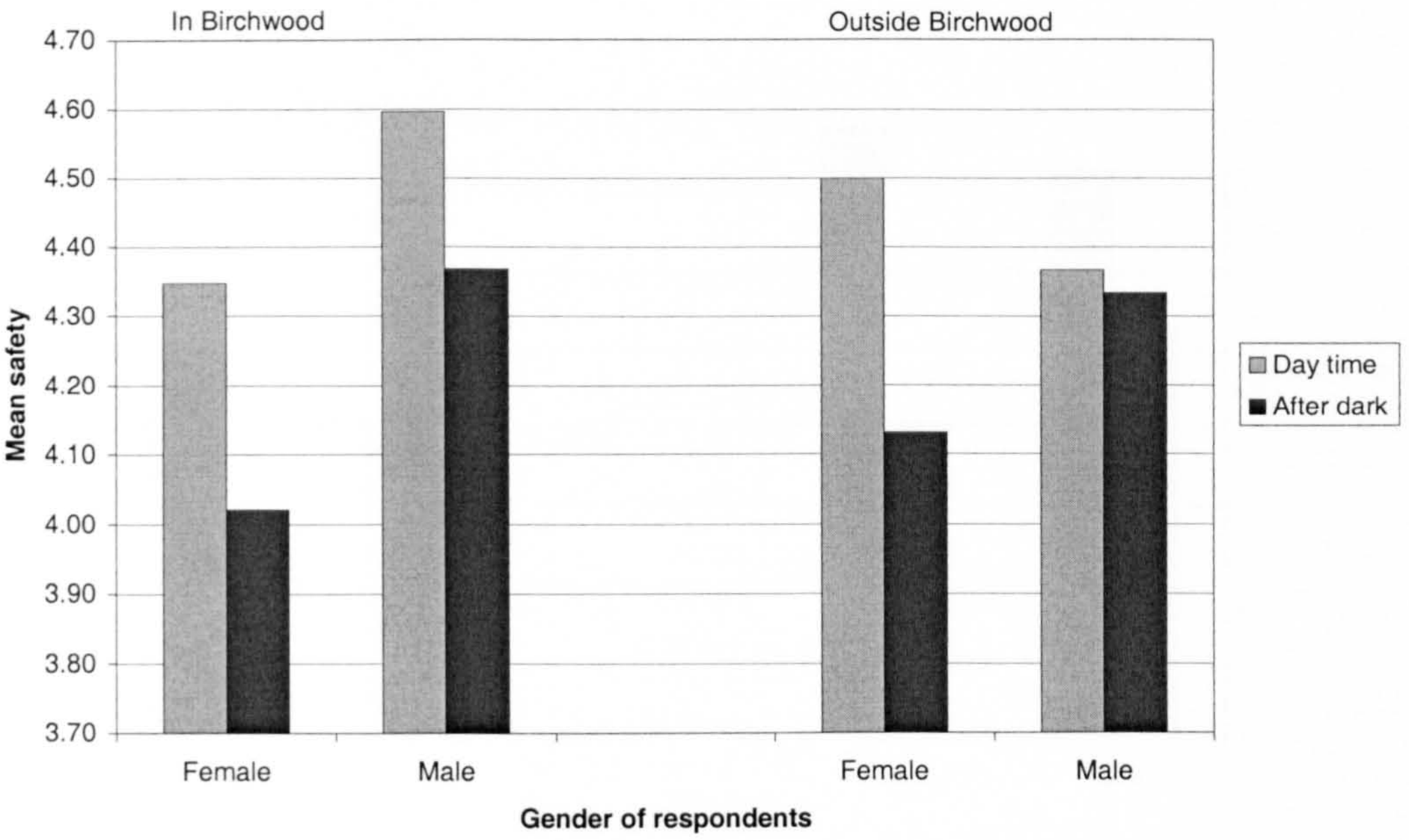

Figure 8.12 Effect of gender on respondents' evaluation of their personal safety in their own home and garden, during the day time and after dark

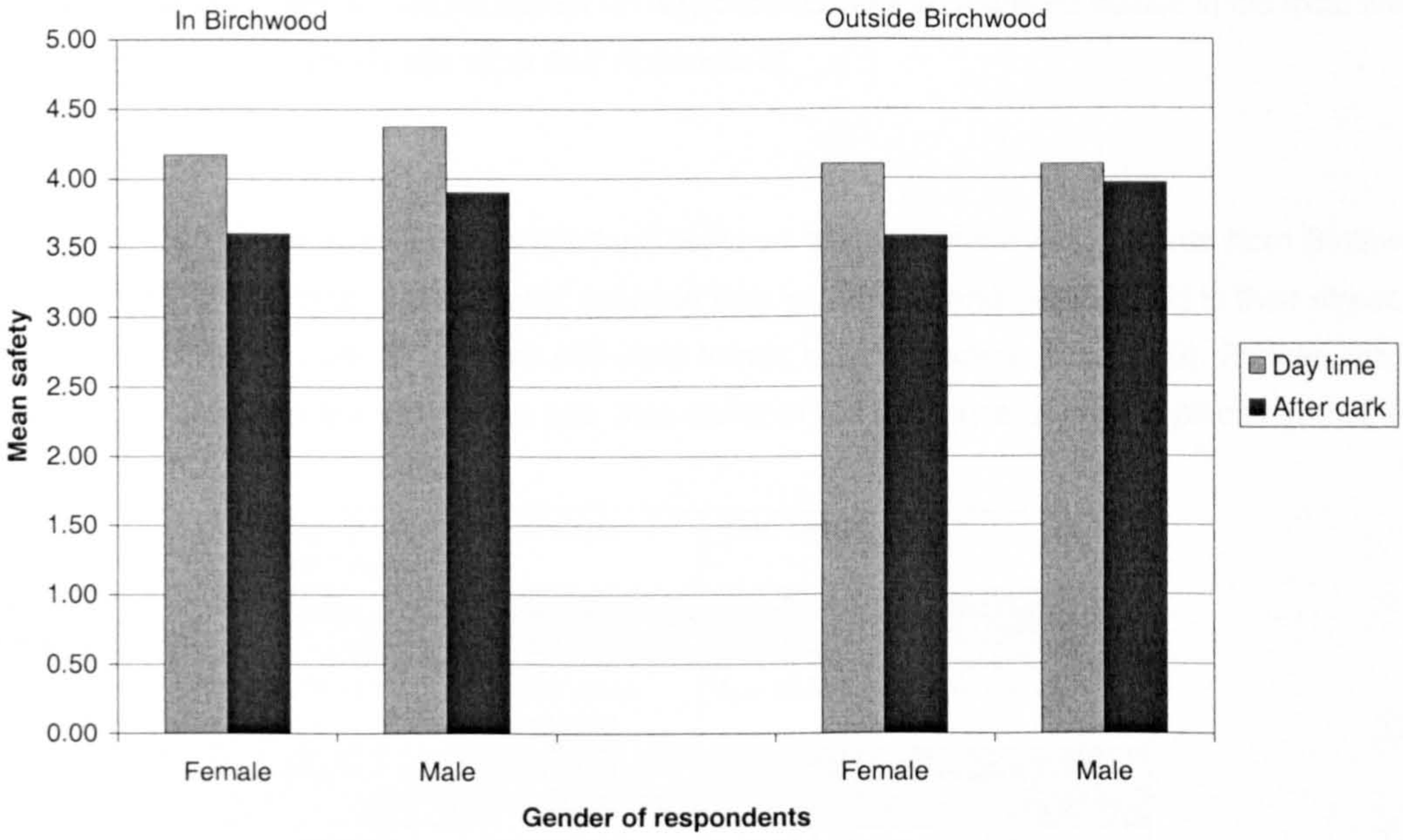

Figure 8.13 Effect of gender on respondents' evaluation of their personal safety in their street, during the day time and after dark

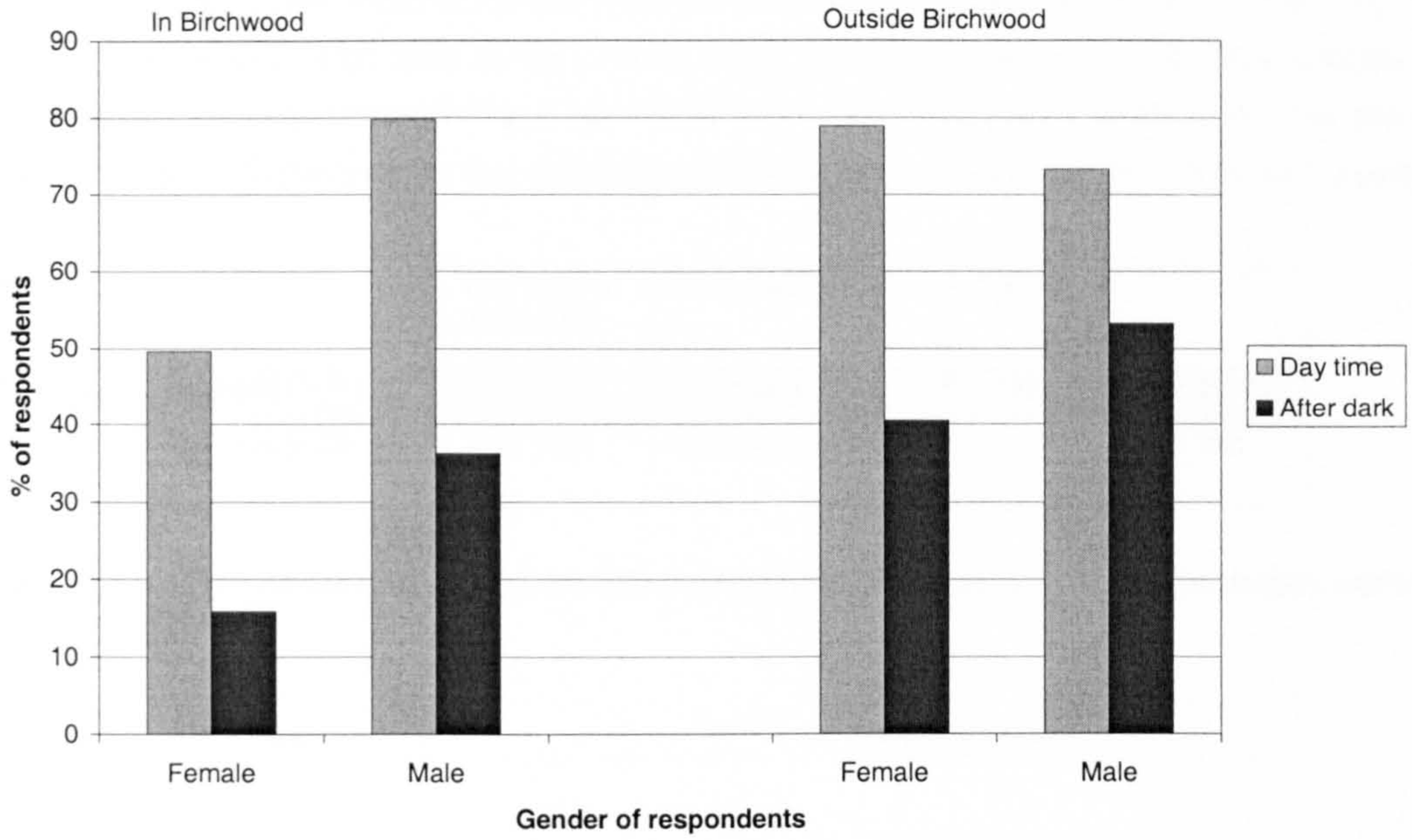

Figure 8.14 Effect of gender on respondents' tendency to identify unsafe places in the local area (bars represent respondents who did NOT identify any unsafe places)

Surprisingly perhaps, gender had no impact on respondents' choice of unsafe places in the local area (for non significant test results see table A13 Appendix 8).

Age

Whilst there were some significant correlations between the age of the respondents from Birchwood and their evaluation of their own personal safety in their own home and garden, and in their street, the correlation coefficients were too low for any clear trends to be apparent (table 8.20). Further, the age of the respondents was not associated with their belief in the existence of unsafe places in their local area (table 8.20).

Variable	Day time or after dark	Test used	Test result
Safety in own home and garden	Day time	Spearman's correlation	r_s = -0.151; n = 262; p = 0.014.
Safety in own home and garden	After dark	Spearman's correlation	r_s = -0.157; n = 254; p = 0.012.
Safety in street	Day time	Spearman's correlation	r_s = -0.137; n = 256; p = 0.028.
Safety in street	After dark	Spearman's correlation	r_s = -0.118; n = 253; NS.
Safety in local area	Day time	Mann-Whitney	z = -1.5; NS.
Safety in local area	After dark	Mann-Whitney	z = -0.659; NS.

Table 8.20 Results of tests showing the effect of gender on respondents' evaluation of their own safety in their home, garden and street, and on respondents' tendency to identify unsafe places in their local area, during the day time and after dark.

However, the age of the respondents from Birchwood was significantly associated with their choice of unsafe places in their local area in the case of "large built structures" and "pathways, bridges and underpasses", but only after dark, and the results were barely significant (table 8.21). For the non significant results of the tests on the remaining categories of unsafe places, see table A14, Appendix 8.

Variable	Day time or after dark	Test used	Test result
Large built structures	After dark	Mann-Whitney	z = -2.005; p = 0.045.
Paths, bridges and underpasses	After dark	Mann-Whitney	z = -1.987; p = 0.047.

Table 8.21 Results of tests showing the effect of age on respondents' choice of unsafe places in their local area

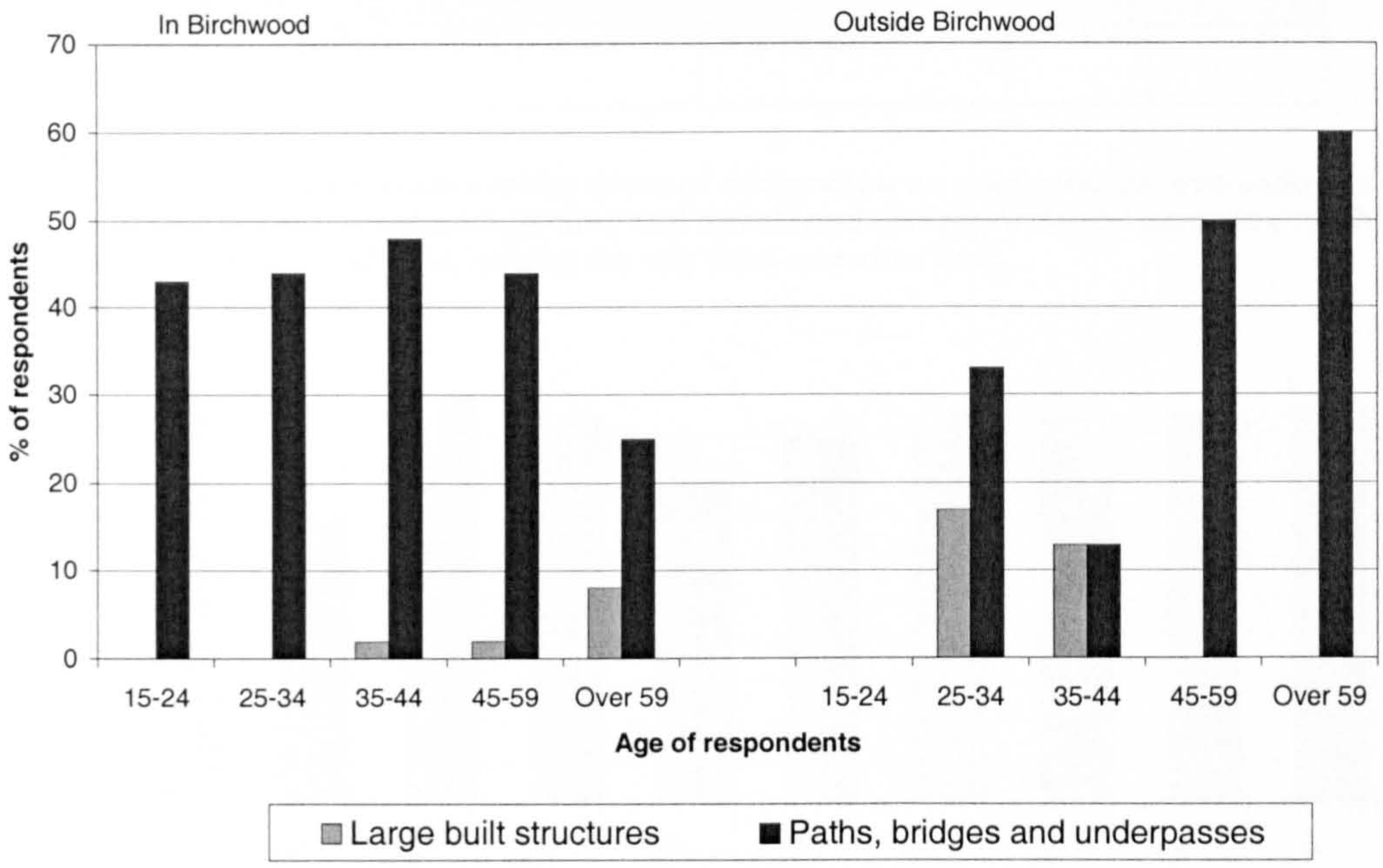

Figure 8.15 Effect of age on respondents' choice of unsafe places in their local area after dark

Whereas there was a tendency for older respondents in Birchwood to identify "large built structures" as unsafe, there was no corresponding trend amongst the respondents from outside Birchwood (figure 8.15). However, no conclusions can be drawn from these results, as only six respondents from Birchwood, out of nine overall, identified these places as unsafe after dark. Age appears to have little impact on the respondents' choice of "pathways, bridges and underpasses" in Birchwood, but outside Birchwood older respondents were more likely to identify these places as unsafe.

Occupation

The respondents' occupation was significantly associated with variations in their evaluation of their own personal safety in their own home and garden, and in their street, both during the day time and after dark (table 8.22). Amongst the respondents in Birchwood, professionals felt the safest in these

environments, whereas carers and the unemployed consistently felt least safe (figures 8.16, 8.17, 8.18 and 8.19). However, the pattern was not the same amongst the respondents from the control HCA's outside Birchwood. Although the unemployed amongst the control group also felt relatively unsafe, the carers felt very safe, and it was the skilled, partly skilled and unskilled respondents, as well as students, who felt least safe (figures 8.16, 8.17, 8.18 and 8.19).

Variable	**Day time or after dark**	**Test used**	**Test result**	**Exact significance= E Monte Carlo significance= MC**
Safety in own home and garden	Day time	Chi-square	$x^2 = 17.773$; df = 9; p = 0.038.	
Safety in own home and garden	After dark	Chi-square	$x^2 = 22.371$; df = 9; p = 0.008.	
Safety in street	Day time	Chi-square	$x^2 = 21.679$; df = 9; p = 0.010.	
Safety in street	After dark	Chi-square	$x^2 = 24.076$; df = 9; p = 0.004.	
Safety in local area	Day time	Chi-square	$x^2 = 13.340$; df = 9; NS.	
Safety in local area	After dark	Chi-square	$x^2 = 12.058$; df = 9; NS.	

Table 8.22 Results of tests showing the effect of occupation on respondents' evaluation of their own safety in their home and garden, and street, and on respondents' tendency to identify unsafe places in their local area, during the day time and after dark.

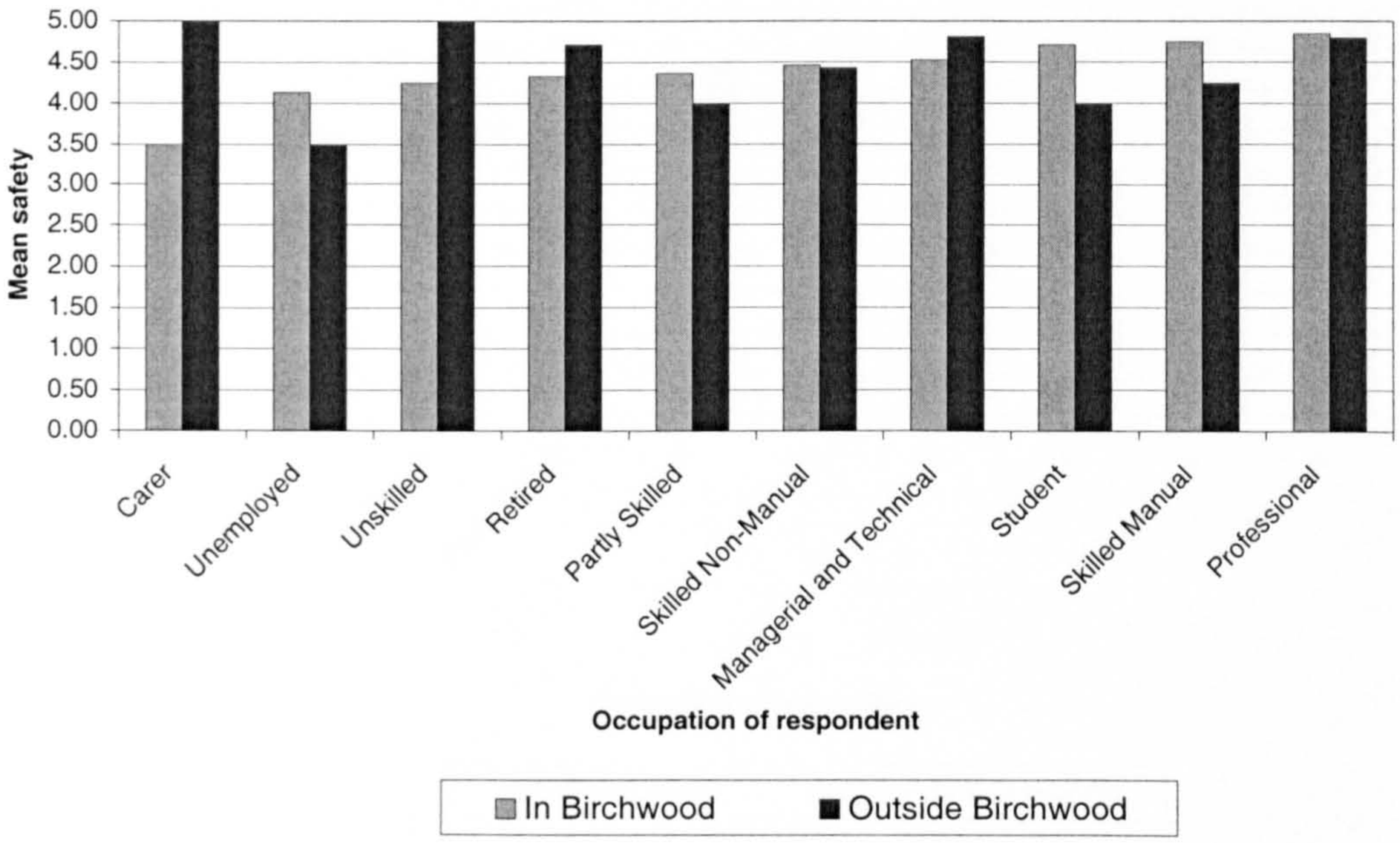

Figure 8.16 Effect of occupation on respondents' evaluation of their personal safety in their home and garden during the day time

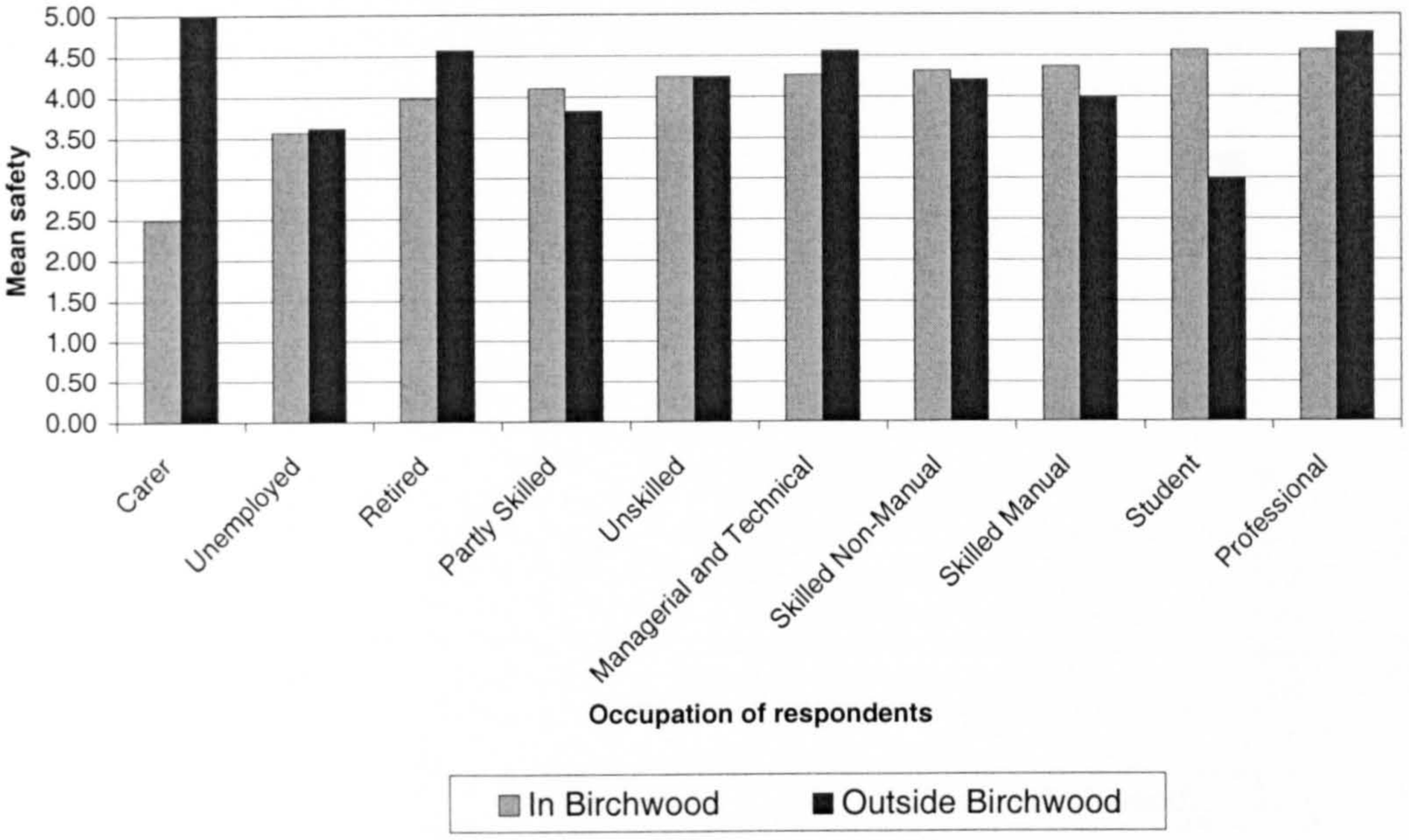

Figure 8.17 Effect of occupation on respondents' evaluation of their personal safety in their home and garden after dark

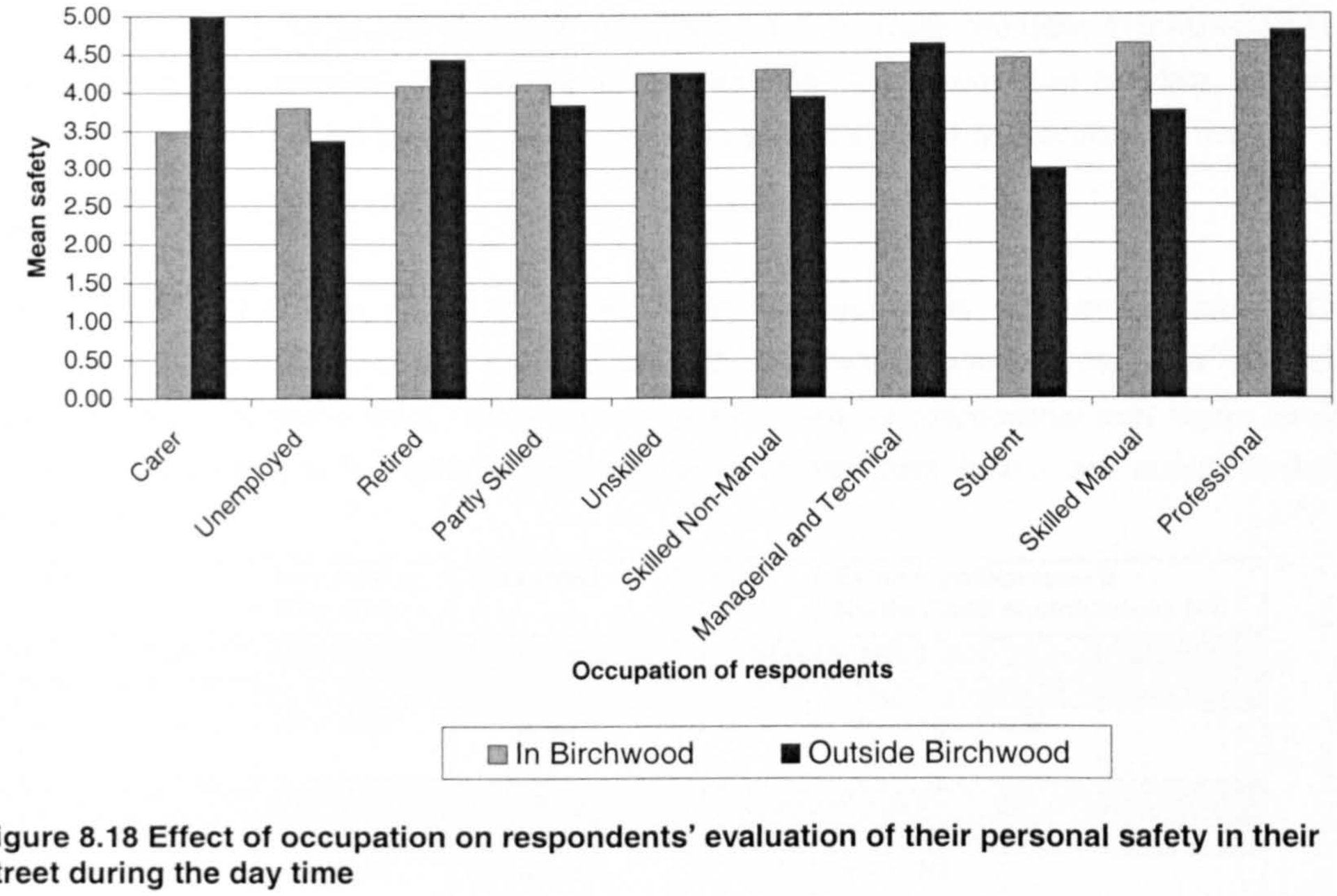

Figure 8.18 Effect of occupation on respondents' evaluation of their personal safety in their street during the day time

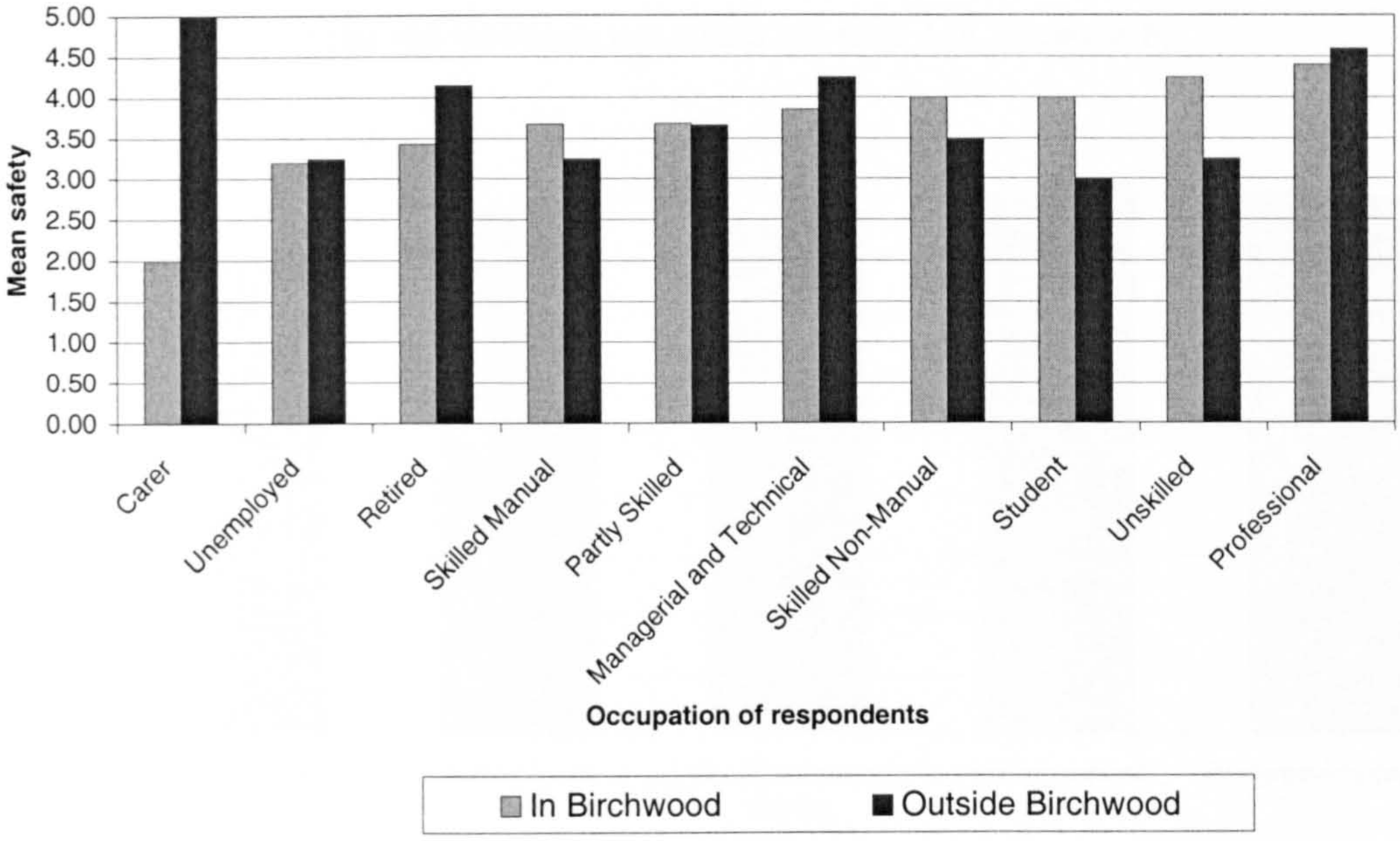

Figure 8.19 Effect of occupation on respondents' evaluation of their personal safety in their street after dark

The respondents' occupation was not associated with the respondents' choice of unsafe places, except in the case of "large built structures" after dark (for test results see table A15 Appendix 8). As previously indicated, however, it is difficult to draw any firm conclusions from the data, as only six respondents from Birchwood and nine respondents overall identified this type of place as unsafe.

Education

The educational attainment of the respondents from Birchwood was significantly associated with variations in their evaluation of their personal safety in their own home and garden, after dark but not during the day time (table 8.23). There was a marked trend for respondents with higher levels of educational attainment to feel safer in these environments after dark, both in and outside Birchwood (figure 8.20).

Variable	Day time or after dark	Test used	Test result	Exact significance= E Monte Carlo significance= MC
Safety in own home and garden	Day time	Chi-square	$x^2 = 6.055$; df = 4; NS.	
Safety in own home and garden	After dark	Chi-square	$x^2 = 10.119$; df = 4; p = 0.038.	
Safety in street	Day time	Chi-square	$x^2 = 8.033$; df = 4; NS.	
Safety in street	After dark	Chi-square	$x^2 = 8.803$; df = 4; NS.	
Safety in local area	Day time	Chi-square	$x^2 = 4.294$; df = 4; NS.	
Safety in local area	After dark	Chi-square	$x^2 = 1.031$; df = 4; NS.	

Table 8.23 Results of tests showing the effect of education on respondents' evaluation of their own safety in their home and garden, and street, and on respondents' tendency to identify unsafe places in their local area, during the day time and after dark.

There was no significant association between the respondents' choice of unsafe place and their level of educational attainment (for non significant test results see table A16, Appendix 8).

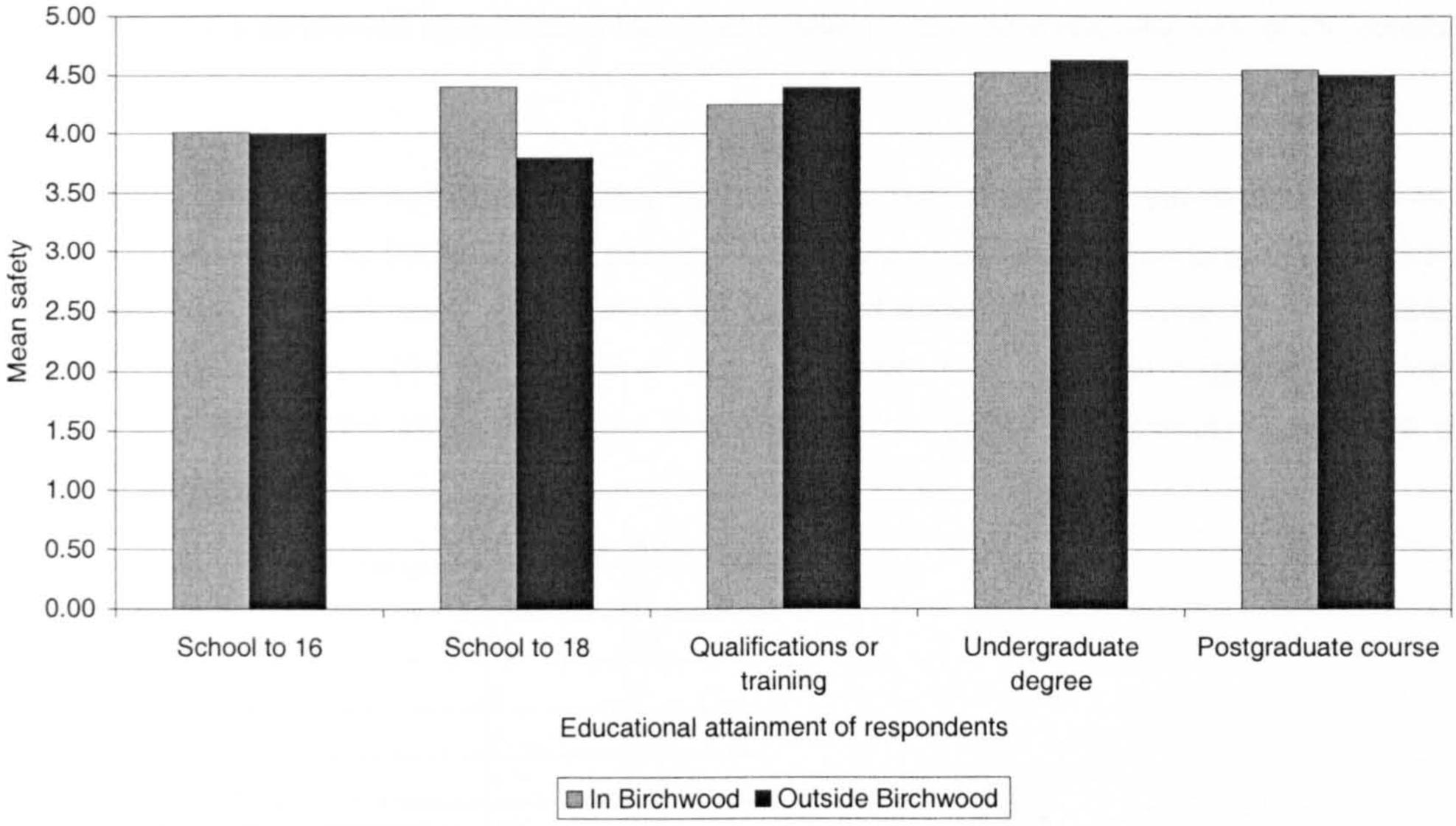

Figure 8.20 Effect of education on respondents' evaluation of their personal safety in their home and garden after dark, in and outside Birchwood

Discussion

What impact does naturalistic woodland as a setting for housing have on the public perception of personal safety at home, in residential streets and in the local area?

The questionnaire data did reveal statistically significant correlations between the respondents' perception of their personal safety in their own home and garden, and on their street, and the vegetation density of the HCA's in which the respondents' homes were situated, suggesting a tendency for the respondents to feel less safe in higher vegetation density HCA's. However, in all cases, the correlation coefficients were too low to form the basis of clear trends. Likewise, although the questionnaire data suggested that respondents who live in areas with higher densities of woody vegetation were significantly more likely to identify unsafe places in their local area, once again there was no obvious trend. Generally speaking, the housing density of the HCA's was a better predictor of the respondents' feelings of personal security, with respondents from higher housing density areas feeling consistently less safe in these environments.

The finding that vegetation density does not impact on the perception of personal safety in the home and garden, and on the street, is strengthened by the fact that there was no significant difference in the safety ratings of the respondents from Birchwood and the respondents from the control HCA's outside for these environments. However, the position is different in the case of perception of safety in the local area. Despite the fact that there was no clear link between the vegetation density of the respondents' HCA's, and their tendency to identify unsafe places in the local area, respondents from within Birchwood were significantly more likely to identify unsafe places in the local area, when

compared with respondents from the control HCA's outside. Thirty seven per cent of the Birchwood respondents who answered the question identified unsafe places in the local area during the day time, compared to 23% of the respondents from the control HCA's. After dark, the contrast was more marked: 75% of the Birchwood respondents identified unsafe places, whereas only 54% of the control respondents did.

The types of unsafe places that were identified by Birchwood respondents are set out in table 8.24. During the day time, places falling into the category of "pathways, bridges and underpasses", "green spaces" and "local facilities", were most likely to be perceived as unsafe. The same types of places were picked after dark, but with the addition of "built up areas". Thus, the data suggests that most Birchwood respondents find particular places that are certainly green, and probably also have a woodland character, unsafe.

	Day time	After dark
	%	%
Local facilities	13	20
Roads and motorways	4	2
Built up areas	4	13
Large built structures	1	3
Pathways, bridges and underpasses	47	40
Green spaces	28	18
Other	2	4

Table 8.24 Types of unsafe places in the local area identified by Birchwood respondents

The evidence therefore suggests that not only are Birchwood residents more likely to feel unsafe in their local area than residents from outside Birchwood, but also that Birchwood's woodland structure is at least partly to blame for this. However, the evidence from Chapter 7, "Place Identity" also suggests that the local green spaces that are considered unsafe by Birchwood residents may also be the places that they most value. The respondents from outside Birchwood were also fearful of places in the locality, namely places falling into the category of "built-up areas". As Chapter 7 confirms, these were also places that these respondents actively disliked. Thus, even though some Birchwood residents consider the local green spaces unsafe, many also place great value on them, suggesting that the benefits of Birchwood's woodland structure may outweigh or at least counterbalance its disadvantages. This is discussed further in Chapter 10, "Conclusions".

How safe are local green spaces considered to be, compared with other types of urban public space?

The findings relating to the respondents' perceptions of "pathways, bridges and underpasses" were very interesting. There has long been a commonly held belief in the landscape profession, based on anecdotal evidence, that paths and routeways surrounded by woodland are regarded as extremely unsafe by the public. As Chapter 5, "Physical and demographic profile of the case study area", page 90, describes, one of the main concepts inherent in the plan for Birchwood was the complete separation of vehicle and pedestrian traffic by placing footpaths away from the roads within the woodland belts.

As we have seen, over 47% of Birchwood respondents who answered this question identified "pathways, bridges and underpasses" as unsafe during the day time, and 40% thought they were unsafe after dark.

Neither the vegetation density nor the housing density of the HCA's made any difference to the respondents' tendency to pick "pathways, bridges and underpasses" as unsafe places in their local area, presumably because the bulk of the footpaths are located within the green structure and woodland belts, outside the envelope of the HCA's.

As the following excerpts from the interviews illustrate, the issues that came up in relation to "pathways, bridges and underpasses" included enclosure, isolation, fear of attack, encroachment by vegetation, discomfort from insects, graffiti, litter, inadequate lighting and unsafe path surfaces.

> **AJ**: "you picked the footpaths through the wooded areas as the places in your local area where you would feel unsafe alone after dark."
>
> **Mr W**: "Yes well they are of course the places where any young person or a person who intended to attack you would pick for the place and of course you do get a lonely feeling, there aren't many of us use the footpaths so there are many times I've been totally alone but I don't feel unsafe because I suppose the good lighting around and because I don't go onto those footpaths after dark, I have no need to."
>
> **AJ**: "Yes, I mean do you feel that they're inherently unsafer I mean it's probably a question that's impossible to answer but do you feel that the footpaths are inherently unsafer than say some you know some of the perhaps footpaths that you experienced when you lived in the other areas in Warrington that you lived in?"
>
> **Mr W**: "Well I just said the footpaths around here are not exposed to the view from anywhere else, you could be completely surrounded by bushes and trees because they wind backwards and forwards, there are many yards to be traversed when you are totally alone and no-one would be able to see you or probably even hear you if you called out so from that point of view, with that isolation when you're on the footpaths there could be danger but over here of course if we had the hooligans there are in other areas of town."
>
> ...
>
> **Mr W**: "a short footpath along that area would help many people and I've noted that one or 2 people prefer to walk up the roadside or on the grass rather than go through the woods, that's only because that particular footpath isn't very well maintained the bushes have overcrowded it, you're likely to be able to walk it thought gnats and flies and all that sort of thing rather than it being a pleasant experience, it can become an ordeal to some people..."
>
> **AJ**: "do you think that do you think that the pathways have become too overgrown?
>
> **Mr Cw**: "I think they're overgrown...they're too much and they're also they've got muddy puddles and dirty puddles...and bricks broken away and bits of this the grass is encroaching to make the very like it's like mildew and slime...very very dangerous underfoot
>
> **AJ**: "in common with many other residents of the Norden Close area, you stated that you felt that the underpass from Warrington road to Birchwood centre was an unsafe place to be alone during the day and after dark, can you tell me more about the fears that you have about this place?
>
> **Mrs SS**: "Well I used to walk across to Birchwood and there was a period of time where I was going on my own in the beginning I didn't seem to mind but it began to feel that when anybody passed me, I'd look at them suspiciously and have an uncomfortable feeling because when you go under that underpass it's beautiful to walk that way and you walk up towards coming over the roads, but it's very quiet and lonely and so you do tend to suspicious of people and then there was an awful lot of graffiti on that underpass, the lights were on in the day time and sometimes they were out at night, obviously they'd been running up there was disgusting things written on it, there was broken bottles always around and I mean my son is an adult and he's come from the station and he wouldn't walk that way from the station and Les he

used to go out for Christmas with the people from work and he'd go down, he'd walk across in the day to get the train but we used to pick him up in the evening even if it was 8 or 9 o clock wouldn't we?

However, although proportionately greater numbers of respondents from Birchwood (table 8.25) did identify "pathways, bridges and underpasses" as unsafe, compared to respondents from outside this location, these results were not statistically significant. In addition, figure 8.7 (page 207) indicates that proportionately more of the respondents from the three control HCA's outside Birchwood identified these places as unsafe, compared with respondents from many of the HCA's within Birchwood. This suggests that "pathways, bridges and underpasses" have other generic characteristics that contribute to the fears associated with them, quite apart from the additional risks that may be perceived to lie in a woodland setting.

		Day time		After dark	
		Count	%	Count	%
Pathways, bridges and underpasses	**In Birchwood**	42	47	74	40
	Outside Birchwood	4	27	14	39

Table 8.25 Respondents identifying "pathways, bridges and underpasses" as unsafe places in the local area, during the day time and after dark and in and outside Birchwood

Respondents from the control HCA of Shakespeare describe these characteristics during the interviews, when talking about one particular local footpath:

AJ: "In common with other residents of the Shakespeare Grove area, you said that you disliked the maintenance of public areas on your street. Can you tell me what is wrong with the maintenance of public areas?"

Mrs Sy: "Well the path it's, the path that runs down the bottom here."

AJ: "Yes is that the one that runs down to Long Lane?"

Mrs Sy: "I mean I don't think anybody with a brain would ever go down there at night it is so badly lit and the bushes and it floods when it really rains part of floods so you might go to paddle and the litter is I mean you see the children cut across there to school and the litter is terrible. I mean I've seen a few needles and condoms and things down there. It's I don't anybody would you know ever go down there, I mean I've never gone down there at night time ever I've been down there occasionally but not very often at all really I think that's about the worse thing that is don't sort what seem to bother with it at all really"

Mrs I: "just at the bottom of the avenue there and it goes to the main road, and all the school children were down there and it's not bad when you going down with the school children but it's not nice to go down on your own."

AJ: "right why is that?"

Mr I: "well it's like with it being enclosed like that"

Mrs I: "it's just like"

Mr I: "you're like on your own, if anybody could be down there"

Mrs I: "and there's trees down bushes down there and"

Mr I: "but we do get the occasional mugging"

AJ: "Do you?"

Mr I: "Not so much round here but we've had them not far away from here have we where old people have been robbed you know and beaten."

AJ: "What else were you saying about it, you were you were about to say something else, you were going 'and…'?"

Mrs I: "It's very high fencing because it's it backs onto the bowling green and things like that from the club and then it's very high fencing on that side cause it's the back of the houses and the they've put very high fencing up you know cause it's very narrow and it's a bit..."

AJ: "Enclosed"

Mrs I: "mmm".

These comments suggest that these generic physical and experiential characteristics of pathways include: enclosure and narrowness (to which trees and shrubby vegetation may contribute), poor lighting, poor drainage and path surface, litter (including evidence of anti-social activities such as needles), lack of maintenance and isolation and fear of assault. It is important to note that enclosure can be created by hard structures such as "high fencing" as well as vegetation.

After "pathways, bridges and underpasses" Birchwood respondents were most likely to identify places falling into the category of "green spaces" as unsafe places in their local area. Twenty eight per cent of the Birchwood respondents who answered this question thought "green spaces" were unsafe during the day time, and 18% picked them after dark. Examples of the kinds of green spaces the respondents picked are Birchwood Forest Park, Risley Moss and Birchwood Brook. Although there appeared to be a significant trend for respondents from low vegetation density HCA's in Birchwood to identify "green spaces" as unsafe, this apparent trend was due to the concerns respondents from Gorse Covert had about Birchwood Forest Park (discussed later in this chapter, see page 227), rather then any underlying association with vegetation density. Proportionately more respondents from Birchwood identified "green spaces" as unsafe, compared to the respondents from the control HCA's outside, but these differences were not statistically significant (table 8.26).

		Day time		After dark	
		Count	%	Count	%
Green spaces	In Birchwood	25	28	34	27
	Outside Birchwood	4	18	2	6

Table 8.26 Respondents identifying "green spaces" as unsafe places in the local area, during the day time and after dark and in and outside Birchwood

After "pathways, bridges and underpasses" and "green spaces" Birchwood respondents were most likely to identify places falling into the category of "local facilities" as unsafe places in their local area. Thirteen per cent of the Birchwood respondents who answered this question thought "local facilities" were unsafe during the day time, and 20% picked them after dark. "Local facilities" as a category included references to local shops and pubs. As Chapter 5, "Physical and demographic profile of the case study area", page 88, explains, each of the three districts in Birchwood (Oakwood, Gorse Covert and Locking Stumps) has a local centre comprising a shop, pub and church. In Oakwood, the shop is also the local post office. Although such places seem innocuous enough to the outsider, during the course of the interviews it became apparent that in Birchwood they are teenagers' favourite gathering places. Whilst opinions about the actual danger posed by the teenagers varied, it was clear that, at the very least, they were a disincentive to visiting these places:

Mrs W: "outside the shop and that's quite threatening if you go at sort of 8 o'clock for some milk and there's 20 teenagers with nowhere to go drinking cider outside the shop"

...

AJ: "When you say you feel threatened by them do they actually threaten you?

Mrs W: "Oh no it's just that, no they're quite nice I mean I smile at them or speak to them or you know they'll probably laugh and joke with you. It's just the presence that I think is threatening cause they're sort of gangs and again I think a lot of that is what's on TV, and the way things are reported now, everybody's so much more aware of what can go on, so instead of going through life with a sort of blissful ignorance, again I'm looking for things and being critical of things so you're just more aware, and I think maybe I am I don't know maybe I'm a nervous person I don't, I try not to be but I do feel aware of crime."

AJ: "And you picked the place outside the local shop as the area you most disliked in your local area."

Mr Mc: "Yes."

AJ: "Can you tell me more about the problems with the shop?"

Ms N: "Perhaps just kids hanging around."

Mr Mc: "The shop is just the place for congregating kids really."

Ms N: "Which you get anywhere and it wouldn't matter."

Mr Mc: "And they're just loud and they hassle you if you go to the shop they often want you to get cigarettes for them or drink them whatever I mean they're no really trouble it's more the menace of them really I think because I mean even in summer some of them are sort of hoods up and everything and coats on and stuff and"

Ms N: "they have had problems in the shop"

Mr Mc: "they have had problems in the shop and like **[Ms N]** was saying there's been burnt out cars there, there was a place along side the shop that was burnt down that was a community hall or something wasn't it yeah I don't know what it was, there was a youth a youth centre there laid up you had a police car there was a youth centre at the side of it that is closed down now and has become a chip shop and get away from the sandwich shop that's along side it I mean they are trying their best to do things, but part of the problem was there were bins there but the kids and pull them out or they'd strew the litter all over the place so rubbish is dropped there, there's broken glass there it really it it's a problem bit within Oakwood really, bit around the shop."

It became apparent during the interviews that a number of respondents felt that there were insufficient facilities for young people in the Birchwood area, and that this explains why they are driven to use the "local facilities" as social centres. This issue is explored further in Chapter 9, "Children".

In one of the preliminary interviews a respondent also described how an armed robbery had occurred at Oakwood Post Office and this may also explain why this particular local centre is considered unsafe.

Whilst there appeared to be an association between high vegetation density and the tendency to identify "local facilities" as unsafe places in the local area during the day time, there was no consistent trend. However, respondents from Birchwood were significantly more likely to identify "local facilities" as unsafe after dark, compared to the control group from outside Birchwood. Whereas 20% of the respondents from Birchwood (n=37), who thought that there were unsafe places in their local area, identified these types of places as being unsafe after dark, only 6% of respondents from outside Birchwood (n=2) thought they were. The interviews with members of the control group suggested strongly that teenagers were seen as an issue in every HCA in the study- this so-called problem was

not restricted to Birchwood or the higher vegetation density areas. However, in the control HCA's the issue of teenagers did not seem to be so strongly linked to "local facilities". Although these respondents reported instances of teenagers hanging around the local shop, they also saw teenagers congregating on their street, or in their local green space, as a problem.

Whilst respondents from Birchwood were more likely to find "pathways, bridges and underpasses", "green spaces" and "local facilities" unsafe, those from outside Birchwood were significantly more likely to feel that local places falling into the category of "built-up areas" were unsafe (table 8.27).

		Day time		After dark	
		Count	%	Count	%
Built up areas	In Birchwood	4	4	24	13
	Outside Birchwood	4	27	10	29

Table 8.27 Respondents identifying "built-up areas" as unsafe places in the local area, during the day time and after dark and in and outside Birchwood

Thus, the evidence suggests that "pathways, bridges and underpasses" are the type of places that are most commonly looked upon as unsafe in urban and suburban residential settings. "Green spaces" are also regarded as unsafe, though far fewer respondents picked these places compared to "pathways, bridges and underpasses". There is no evidence that residents of Birchwood feel differently in this respect from residents of the rest of Warrington: although proportionately greater numbers of respondents from Birchwood identified these places as unsafe, the differences were not significant. The significant differences between Birchwood respondents and those from the control group outside lay in their attitudes to "local facilities" and "built-up areas". Residents of Birchwood are more likely to find "local facilities" unsafe, whereas those from outside are more likely to pick "built-up areas".

The data from the postal questionnaire also revealed that each district within Birchwood: Oakwood, Gorse Covert and Locking Stumps, had its own geography of fear (table 8.28).

Unsafe day time places			
%	Oakwood	Gorse Covert	Locking Stumps
Local facilities	25	13	3
Built up areas	0	20	3
Roads and motorways	11	0	0
Large built structures	3	0	0
Pathways, bridges and underpasses	28	13	77
Green spaces	31	53	15
Other	3	0	3

Table 8.28 Birchwood respondents' choice of unsafe places in the local area during the day time

In Oakwood the respondents were more or less equally likely to identify "local facilities", "pathways, bridges and underpasses" and "green spaces" as unsafe, though significantly more respondents from Oakwood picked "local facilities", compared to respondents from Gorse Covert and Locking Stumps. In

Gorse Covert and Locking Stumps, on the other hand, the respondents' concern was focused on one type of place. In Gorse Covert most respondents picked "green spaces", and in Locking Stumps most respondents picked "pathways, bridges and underpasses".

There is probably a combination of factors that explain why "local facilities"- the gathering-place for teenagers in all three districts- were seen as particularly unsafe in Oakwood, rather than in Gorse Covert or Locking Stumps. These probably relate to the deprivation and insecurity experienced by a number of the respondents from this district. Perhaps the less affluent respondents were more dependent on "local facilities", and therefore more exposed to what went on outside them. As described above (Chapter 5, "Physical and demographic profile of the case study area", page 91) Oakwood contains more HCA's consisting of high density social housing than Gorse Covert and Locking Stumps. There is no evidence to suggest that this perception of the "local facilities" is connected in any way to Oakwood's woodland setting.

The interviews suggested that the fears felt by respondents from Gorse Covert in relation to "green spaces" relate to the possibility of encountering a potential aggressor:

> **Ms S**: "they have had problems with Birchwood Forest Park, and again I know families with young children who won't allow them to go there because I think they get intimidated by older kids, it seems to be a congregating point, and that just seemed to be, and I just think it's symptomatic really, and it's not just here it's everywhere."

> **Mrs F**: "if you in there [Birchwood Forest Park] and there was anybody you know because I mean we have had people that have been in there that children or adults even that have been a bit threatened by them you know little incidents that have happened so you wouldn't want that because to run away there's nowhere to go."

As previously indicated in Chapter 7, "Place Identity", page 184, one respondent made it clear during the interviews that the potential aggressors she was afraid of meeting in Birchwood Forest Park were from Oakwood, one of the "built-up areas" in Birchwood that many respondents from Gorse Covert also found to be unsafe. This respondent's views may well be representative of a number of respondents from Gorse Covert.

Given that respondents from Gorse Covert were most likely to identify local "green spaces" as unsafe it is curious that these types of places were also the ones that were most frequently chosen by these respondents as their favourite places in the local area: no less than 87% of the respondents from this district picked "green spaces" as their favourite local place, emphasising that many respondents have both positive and negative feelings about the same places.

Concern about "pathways, bridges and underpasses" was concentrated in Locking Stumps. There is one difference between the three districts that could explain their differences in perception of "pathways, bridges and underpasses". Although this research did not include a formal study of the characteristics of the paths in the three districts, the author has walked them, and studied their route from plans. There are sections of the paths in all three districts that are surrounded by dense vegetation, and sections that are relatively clear. One difference is that in Oakwood and Locking Stumps there are often no alternatives to the densely vegetated paths, as there is no continuous

pavement or pathway alongside the main circular access road and bus routes, whereas in Gorse Covert there are pavements along both sides of the whole of this circular road, as well as a densely vegetated pathway that runs around the entire perimeter of Gorse Covert. Another difference is that whilst Oakwood and Locking Stumps are within a one mile radius of the High School and district shopping centre, Gorse Covert is sufficiently far away to make walking a less desirable option. Thus in Gorse Covert there is a stronger physical and functional demarcation of the path system: there are functional routes alongside the main access road and the bus route, without vegetation, and a recreational route around the perimeter of Gorse Covert itself that is often surrounded by dense woody vegetation. In Gorse Covert residents are not forced to come into contact with this vegetation if they do not wish to do so.

The interviews also indicated that a number of criminal incidents had taken place on the paths in Oakwood and Locking Stumps. Here a male respondent from Nightingale in Oakwood recounts his experience of an attempted robbery on the footpaths:

> **Mr W:** "Walking the footpaths as I do as I have done for the last three years, I expected to be unsafe to a certain extent because there I am with a mobile phone on my hip and looking as though I might have a wallet full of money and sometimes of course coming back from the supermarket two big shopping bags, and being alone I can understand that young hooligans might think, "ah he's a" you know "he's an easy strike". Only once in the five and a half years I've been in this area have I been accosted by two young men and when they said you know "give us your mobile phone" all I did was just take off my watch turn it around and say "I'm just in the mood for you two" and they both ran away, so of course I did have a black belt in judo so I don't feel, I'm safe in those circumstances although of course when you are outnumbered the problem can arise but although I'm 69 I still keep myself pretty fit and I feel that I can handle one or two young men who come across me but I can understand that the elderly residents who find difficulty walking and moving around could feel unsafe."

This is how a female respondent talks about a footpath that runs from Locking Stumps to the Birchwood centre:

> **Mrs Cl:** "but there's about six women from here were attacked and one of them she I don't I've not seen her for ages was never the same again but she was the only person who picked the fellow out."
>
> **AJ:** "Was he caught then?
>
> **Mrs Cl:** "Oh he was caught yes but she was the only one that could pick him out of a line up".
>
> **AJ:** "And that's put you off really walking you...?
>
> **Mrs Cl:** "No I wouldn't walk it's too lonely because a lot of people have cars so there's not many, we always used to meet someone that didn't drive and walk and talk and they'd have a pushchair and it was lovely."

However, a respondent from Gorse Covert had also heard about crimes that had occurred on the perimeter footpath around Gorse Covert:

> **Mrs L:** "my friend has had two flashers walking her dog, then I said, "oh I I've not" she said "well aren't you lucky" you know...that's half past one at lunch time."
>
> **AJ:** "is that the on the circular walk?"
>
> **Mrs L:** "Yeah."
>
> **AJ:** "Round Gorse Covert?"
>
> **Mrs L:** "Yeah."

The incidents of sexual assault in Locking Stumps appear to have left a profound impression upon its residents. Three other respondents from this district mentioned them during the main tranche of

interviews, and one respondent talked about them during the pilot interviews. The footpaths in Locking Stumps seem to have acquired a history in popular memory that cannot easily be shaken off. Whilst criminal incidents on the footpaths were also mentioned by respondents from Oakwood, and by one respondent from Gorse Covert, they do not seem to have had the same impact as the sexual assaults in Locking Stumps.

As Chapter 7, "Place Identity" (page 192), indicates the footpath network in Birchwood is highly valued, particularly for recreation. As that chapter emphasises, many of the interviewees feel strongly that the woodland character of the footpaths is part of their special quality. Even the respondent who told the story about the sexual assaults on the path in Locking Stumps, who is quoted above, did not want the woodland to be removed from the area where the assaults had occurred:

> **AJ**: "So when I asked you whether it would help if the trees were cut down and you said "No" did you mean it wouldn't help or you don't think the trees should be cut down?
>
> **Mrs Cl**: "I haven't been there for ages so I don't know how they are now but no I don't think we should have to have that part cut it was a nice beauty spot you see no I wouldn't cut a beauty spot away."

The interviews also indicated very powerfully that these wooded footpaths are frequently unsuitable as transport routes, particularly for more vulnerable members of society. The strength of feeling about this issue in the locality is also apparent from the fact that Warrington Borough Council have recently begun to lay footpaths along the main roads in Birchwood. Respondents reported that before the introduction of these footpaths, residents would walk along roads or grass verges, rather than use the wooded footpaths:

> **Ms S**: "recently what they have done round here especially on the main roads and it was a shame really be, they've put grass verges but no pavements on a lot of areas but recently they've done some pavement cause I used to I got to work in Langley Carr, you used to see girls like tottering with high heels, on the grass, or actually in the gutter [inaudible] it was wet and rainy".

All the respondents spoken to during the interviews agreed that the original footpath system was inadequate and that there was a need for two sets of footpaths addressing functional and recreational needs respectively.

> **Mr Sp**: "Safe well lit, which in a way is a nice compromise providing, but if you do that we don't need to tarmac the woodland paths, so you can you can separate the two functions, and especially the bits actually still in woodland, it's a little bit easy to argue that maybe when they have tarmac on the footpaths that do lead...that weave around the houses in the middle of the houses, but on these out outer areas I really would like to resist this desire to tarmac it, I mean I'm having a problem because we run a cross country race around the Forest Park, and where they've added in some of the extra tarmac now on the footpaths beside the road, has demolished my course."

It was felt that residents should have the option of using footpaths that are hard-surfaced, well-lit, open (not surrounded by vegetation or routed via underpasses) and direct:

> **Mr P**: "if I followed the path I'd have to go 3 times the distance you know I'd have to wear a big loop instead of going from here to here I'd have to go in a big loop like that."

Although welcomed as an alternative to the woodland paths, the new pavements alongside the roads were not always seen as a solution, as they would not always provide a direct route:

> **AJ**: "Ok and we've talked a bit about the pathways and you've said that they're you would feel too frightened to walk along the pathways and I can't remember did I ask you whether it would be different if there were pathways along the roads?"
>
> **Mrs Cl**: "No because we still wouldn't be able to walk to the shops quickly it was only 10 minutes 15 to walk into Birchwood from Locking Stumps."

AJ: "What along the pathways?"

Mrs Cl: "Along the past those ponds and the walled garden which I told you about and we'd have to wind round and round the road."

A minority of interviewees also felt that the footpath network had negative implications for crime believing that the wooded footpaths allow criminals to make quick getaways along routes that are inaccessible to police cars:

Mr B: "Well apart from that there's security aspects as well, during the day you get kids playing in their shelter in the [inaudible] but on a night and certainly recently we've got 26, 27 burglaries in six weeks on this estate, and one of the principal or shall I say who is believed to be the principal perpetrators knows the estate like the back of his hand, does use trees etcetera. for cover as a way of getting from point A to point B and there, you know the police have sat in cars waiting to trap him, and he just calmly walks through with stolen property in a supermarket trolley."

What is the impact of housing density on the perception of personal safety at home, in residential streets and in the local area?

Whereas no link could be established between vegetation density and the respondents' evaluation of their own safety in their own home and garden and street, nor in their local area, housing density did have an impact. Respondents from higher housing density areas felt significantly less safe in their homes and gardens, and in their street, compared to respondents from lower housing density areas. The housing density of the HCA's had a particularly marked impact on the respondents' perception of their personal safety on their street, with respondents from the high housing density HCA's feeling less safe in this environment than their low and medium housing density counterparts. The housing density of the HCA's had no impact on residents' perception of their safety in the local area. These trends were mirrored by the control HCA's from outside Birchwood.

Just as respondents from high housing density HCA's were less satisfied with aesthetic aspects of their street (see Chapter 6, "Aesthetic factors") they also felt less secure in their home environment and immediate surroundings. Once again it seems unlikely that housing density itself is the cause of their insecurity. This insecurity may be linked to the higher levels of deprivation that can be found in these HCA's, as was suggested in the case of the aesthetic factors (see Chapter 6, "Aesthetic factors", page 155). There is some support for this idea in the links that were found between the respondents' levels of education, occupation and perception of personal safety. These are explored in more detail later in this chapter. However, the explanation that came across most powerfully in the interviews was a very obvious one, namely that feelings of personal insecurity in the home and immediate surroundings are a direct result of crimes that are known or thought to have occurred within or close to this environment. Here, two respondents from high housing density HCA's, and one from a medium housing density HCA give their views:

AJ: " Could you perhaps tell me about the type of thing that would help you to feel safe in the local area, or would stop you from feeling safe in the local area?

Mr Tr: "Stop me feeling safe well, if I saw somebody behaving abnormally yeah, if I saw abnormal behaviour, people fighting, shouting or are there any known cases of doors being kicked in and windows broken I might feel a bit apprehensive."

AJ: "So another sort of big issue was young people gathering?

Mr Cw: "That's right, well that was down at the end there you see...with the drug dealing...and the cars but some have left now...so it's still there but it's not as bad...and you feel how can I put it I've never really felt like un uneasy before...but you do when you're driving past them...you feel you know bit nervous if you...well at the junction, you feel as though it's not there's not the good behaviour for the area."

AJ: "in general residents of Ringwood Close felt less safe in their home and gardens, street and local area, both during the day and after dark than residents of Hazelborough Close, again it wasn't anything, it may not even be statistically significant, it just was a an obvious difference on a bar chart, you know what I mean?

Ms S: "Yeah yeah."

AJ: "Do you do you think that does relate to the sort of the things that have happened here or ?"

Ms S: "I've been here 13 years, and I've never, I have never not, I've lived on my own since 1980, and I've been here since 89 and I have never ever felt unhappy about living here, but I have since I had my handbag stolen, I've had my fence up for a lot, I mean I got to the point where I was, I was in the house and David was outside, and I was inside and I comes in, if I was inside and I wasn't actually in this room, I would lock him out, and he'd have he'd have a key to get in, cause he was round the corner it got really...it got a bit silly really, but I mean I'm at work all day and I do leave the, house I'm always very apprehensive, but whether that's cause I'm getting older or not, I come back, I would go away for the weekend, I come I think oh thank god the house is here, you know, so I don't know, I don't know whether that's an age thing I don't know...well like I say, we've had a handbag, a burglary and we've had 2 or 3 fires on the end house there, in the in the last 2 or 3 years, and that, the end ones are, I think it's been a family feud vendetta."

To test the finding from the interviews that there was an association between the perceived incidence of crime and feelings of personal safety, further tests were carried out on some of the dependent variables related to the perception of safety, and data on the perceived incidence of crime collected elsewhere in the postal questionnaires. In Part 2 of the questionnaire entitled "Your Street" the respondents were asked (question 9):

"Do the activities listed in the table below take place on your street?"

The table contained a list of activities including "Crime e.g. violence or theft". The respondents were asked to "tick the boxes in the table below to indicate whether the activity takes place". The data from question 9 was turned into a nominal (binary) variable where the value 1 indicated that crime took place and the value 2 that it did not take place. This variable was then tested against the dependent variables representing the respondents' perception of their personal safety in their own homes and gardens, and on their street, during the day time and after dark, using a Mann-Whitney test (for more information about these variables see page 196). It was also tested against the dependent variables representing the respondents' tendency to identify unsafe places in the local area, during the day time and after dark, using a Chi-Square test (for more information about these variables see page 197).

Variable	Day time or after dark	Test used	Test result	Exact significance= E Monte Carlo significance= MC
Home and garden	Day time	Mann-Whitney	z = -5.957; p < .0001.	
Street	Day time	Mann-Whitney	z = -5.422; p < .0001.	
Local area	Day time	Chi-Square	x^2 = 13.053; df = 1; p < .0001.	
Home and garden	After dark	Mann-Whitney	z = -5.438; p < .0001.	
Street	After dark	Mann-Whitney	z = -5.180; p < .0001.	
Local area	After dark	Chi-Square	x^2 = 3.280; df = 1; NS.	

Table 8.29 Results of tests showing the effect of belief in the occurrence or non-occurrence of crime on the street on the perception of personal safety in the home, garden, street and local area, during the day time and after dark

Table 8.29 confirms that respondents who knew or believed that crime took place in the local environment felt significantly less safe in that environment. The only exception was in the case of the respondents' tendency to identify unsafe places in the local area after dark. In this case there was no association between belief in the existence of crime on the street and the perception of personal safety, perhaps because many people generally feel that it is unsafe to be out alone after dark, regardless of the known incidence of crime in a particular locality.

Safety in home and garden- day time		
Housing character area	**Mean safety**	**% who thought crime occurred**
Nightingale M	3.85	68
Redshank H	4.22	68
Fern H	4.38	45
Rawlings H	4.44	39
Ringwood M	4.55	23
Lords L	4.56	30
Cadshaw L	4.77	12
Hamsterley L	4.77	14
Hazelborough M	4.82	18
Vulcan H	3.81	81
Shakespeare M	4.50	58
Coppice L	4.88	32

Table 8.30 Effect of belief in the occurrence of crime on street on perception of safety in home and garden during the day time (letters in brackets refer to housing density of HCA's: Low, Medium or High)

Table 8.30 illustrates the close association between belief in the occurrence of crime on the street and perception of safety in home and garden during the day time: as mean safety ratings increased the number of people who believed that crime took place decreased.

There was a widely-held view within the high housing density HCA's in Birchwood that perpetrators, or potential perpetrators, of these crimes were being enabled to move into Birchwood by the failure of the landlord of the public housing (usually Manchester and District Housing Association) to apply any vetting procedures. Respondents who had moved into Birchwood when it was first built contrasted this with the rigorous vetting procedures that they had undergone, before they were permitted to move in:

> **Mrs G**: "I mean I've voiced my opinion on it, Orford is a notorious place for crime or drugs for everything right?"
>
> **Mr G (Mrs G's son)**: "As is Anson and Blenheim [inaudible]".
>
> **Mrs G**: "And Longford's the same way so they've had to pull these houses down because they found asbestos in them so where do why is [inaudible] did they have to put them here, why couldn't they have put them in at Dallam or Bewsey where that area's always boarded up houses, people wouldn't take the houses why couldn't they put them in one of them?"

Mr Cw: "When the new town, you had to be vetted...they wouldn't let you in unless you were married you had a dec you had a family, you had to have stable background...you had to be in work...you had to be various other things before they let you even come here...so there was certain standards kept all the time, with this housing association their format's different, they've got to give housing to anybody...they can't discriminate against them because, but the house association, the new town rather did discriminate against people...but the house association, they're not allowed to do that."

...

Mr Cw: "Some of these houses they put on available anyone come, yeah, they can ring up from prison and ask them about a house...'I've just done 10 years for armed robbery can I have one of your houses please'?"

Mrs Cw: "You see that was one of the main reasons why we wanted to come here to start with because...it was all decent people."

What factors are associated with feelings of personal safety at home, in residential streets and in the local area?

As we have just seen, the absence of crime helps people to feel safe in their home environment and its immediate surroundings. Are there any other factors that can help promote feelings of personal security in these settings? A detailed consideration of the safety implications of different housing designs and layouts is outside the scope of this study. However, it seems appropriate to examine how and why perceptions of safety differ between HCA's and districts in Birchwood.

There were two HCA's that consistently out-performed their medium and high density counterparts in the safety ratings. These were Hazleborough (medium housing density) and Rawlings (high housing density). Not only did respondents from Hazelborough feel safer than respondents from other medium housing density HCA's, they generally felt more secure than respondents from the low housing density HCA's as well. During the interviews all kinds of explanations were put forward by respondents as to the possible reasons for this, and particularly why Hazelborough should be considered safer than the adjacent HCA of Ringwood. These explanations were that:

- The houses on Hazelborough were too small to accommodate families with teenage children who might cause or attract trouble;

- Whereas the street and housing layout on Hazelborough is very linear, the street layout on Ringwood is more organic, and the housing layout is staggered, so that informal supervision of houses by neighbours is physically obstructed by the housing layout;
- Ringwood is closer to the shop, playing field and school, and therefore more accessible to young people who congregate in these areas.

Whilst all of these factors may contribute to the differences in the perception of safety there are far more obvious reasons for Hazelborough's high safety ratings. Hazelborough had the highest proportion (65%) of male respondents of any HCA in the study, and one of the youngest groups of respondents in the study, with 56% of respondents aged between 25 and 44. Later in this chapter we will see how the male respondents in this study felt significantly safer in residential settings compared to the female respondents. Although no corresponding associations with age were found in this study it seems plausible that a combination of maleness and youth would result in feelings of increased personal security. Thus it seems safe to assume that it is predominantly these demographic factors that lie behind Hazelborough's safety ratings.

The position with regard to Rawlings is not as clear cut: as a group the respondents from Rawlings had no demographic characteristics that make them different from the respondents from the other high housing density HCA's in the study. The respondents that were interviewed from Rawlings did not provide any explanations as to why they felt safer than respondents from other high housing density HCA's. Rawlings had one of the highest vegetation densities of any HCA and that the existence of large quantities of woody vegetation is not therefore incompatible with feelings of personal security in residential settings. It seems likely that the respondents from Rawlings felt safer because the incidence of crime and other anti-social activities was perceived to be lower than in the other high housing density HCA's (table 8.30, page 232). However, this perception can quickly change, as illustrated by the comments from interviewees on pages 230, 231 and 233.

Nightingale, a medium housing density HCA, had consistently lower safety ratings than any other HCA in Birchwood. Again there are demographic explanations for these low ratings. Sixty four per cent of the sample from Nightingale was female and 67% were aged over 59. Given the findings in relation to gender it does seem likely that female and elderly respondents would feel more vulnerable.

Generally speaking, the HCA's in Birchwood performed well in terms of perceived personal safety in the home, garden and street, when compared with the control areas from outside Birchwood. Respondents from most of Birchwood's medium and high housing density HCA's had higher safety ratings in these settings than those from the medium and high housing density control HCA's outside Birchwood. However, in the case of the low housing density HCA's, the position was reversed. The low housing density control HCA, Coppice, consistently fared better in the safety ratings for these settings, compared to the low housing density HCA's in Birchwood. The reasons for this are probably extremely complex, and outside the scope of this study. There is no evidence that it is Coppice's low vegetation density that generates these enhanced feelings of personal safety, especially given that some Coppice respondents were exposed to more vegetation than originally thought, due to the methodological error referred to above (see Chapter 3, "Methodology", page 47).

In the case of safety in the local area the control HCA's generally fared better than those from Birchwood. Respondents from Coppice (low housing density) and Vulcan (high housing density) were less likely to identify unsafe places in their local area than their Birchwood counterparts. However, respondents from Shakespeare (medium housing density) evidently felt less safe in their local area than respondents from two out of the three HCA's with equivalent housing density in Birchwood.

What are the impacts of demographic variables such as gender, age, occupation and education on the perception of personal safety at home, in residential streets and in the local area?

As previous studies might predict the female respondents from Birchwood in this study felt significantly less safe in their home and garden and local area, both during the day time and after dark (Valentine, 1989). They also felt significantly less safe in their street during the day time, but for this environment there was no significant difference between them and the male respondents after dark. Curiously, this pattern was not repeated amongst the control sample from outside Birchwood. During the day time these female respondents felt just as safe or safer than the male respondents in these environments, it was only after dark that they felt consistently less safe. This suggests that female respondents from Birchwood actually felt less safe than those from the control HCA's outside. To test this hypothesis, further tests were carried out on the safety ratings of the female respondents, comparing the ratings of the Birchwood sample with the control sample.

Variable	Day time or after dark	Test used	Test result	Exact significance= E Monte Carlo significance= MC
Home and garden	Day time	Mann-Whitney	z = -1.282; NS.	
Street	Day time	Mann-Whitney	z = -0.022; NS.	
Local area	Day time	Chi-Square	x^2 = 10.424; df = 1; p = 0.001.	
Home and garden	After dark	Mann-Whitney	z = -0.839; NS.	
Street	After dark	Mann-Whitney	z = -0.165; NS.	
Local area	After dark	Chi-Square	x^2 = 10.589; df = 1; p = 0.001.	

Table 8.31 Effect of location in relation to Birchwood on female respondents' evaluation of their personal safety in their home and garden, street and local area during the day time and after dark

Table 8.31 shows that there was no significant difference between female respondents from Birchwood and those from outside, except in the case of safety in the local area. Female respondents from Birchwood were significantly more likely to identify unsafe places in their local area, compared to their counterparts from outside (see also figure 8.14, page 215). It seems probable that Birchwood's woodland setting contributes to this difference in perception.

The age of the respondents had very little impact on their perception of safety. Older respondents from Birchwood were significantly more likely to identify places falling into the categories of "large built structures" (e.g. Birchwood shopping centre) as unsafe, and less likely to pick "pathways, bridges and

underpasses", but only after dark. It would be unsafe to generalise from the data concerning "large built structures" as only six respondents from Birchwood picked places falling into this category. Although the data suggests that respondents from Birchwood aged over 59 are significantly less likely to identify "pathways, bridges and underpasses" as unsafe, this is unlikely to be a true reflection of their views, particularly as the trend was reversed amongst the control sample from outside Birchwood. The interviews suggested that elderly respondents from Birchwood are unlikely to go out alone after dark, let alone use a footpath at this time of day, and this may explain why they did not identify these places as unsafe.

It is surprising that the age and gender of the respondents had no other statistically significant association with the respondents' perception of "pathways, bridges and underpasses" as, during the interviews, female and elderly respondents consistently expressed concerns about these places. Here two young women explain their fears about these places:

> **Ms N**: "they're fine and I think as a couple walking they're fine and they're lovely it it's a great place to live great place to walk but I know I was off for quite a long period of time and I wouldn't dream of kind of going out along the back by myself really I'd walk through the houses and that way."
>
> **AJ**: "What even during the day?"
>
> **Ms N**: "Even during the day I think because you are you're quite close to houses most of the time and that's fine but there comes a point...where you're away from the houses and as a woman walking by herself or, I mean the kids tend to play out there don't they so I mean...".
>
> **AJ**: "OK and then again you mentioned the pathways as a place in your local area where you would feel unsafe alone after dark, can you describe your fears of being alone on the pathways after dark?"
>
> **Mrs Gr**: "It would be because and the way I, I never ever walk down here at the night time ever...even with dogs...because there's there is that many like bushes...and little like nooks and crannies...and hills and things like that...that I have got an over imag and overim... an over imaginative brain anyway. I think oh, so that would be that would be why I don't like going down the pathways...just in case...you know someone jumps out at you or whatever...but having said that I've got quite close with a few of the guys round here and they obviously,...they must feel 'What's up with you'?"
>
> **AJ**: "Yeah I think it's a gender thing."
>
> **Mrs Gr**: "It is definitely."

Here two women aged over 59 describe their fears of the pathways:

> **AJ**: "OK and you also identified the parks and pathways as being somewhere where you might feel unsafe alone after dark?"
>
> **Mrs H**: "Yes I would definitely."
>
> **AJ**: "Yes can you tell me why picked those places particularly?"
>
> **Mrs H**: "Because I've walked through them through the day time you know since I've been retired I've walked through them and it's always think on my mind that this is a dreadful place for anybody to come on their own really."
>
> **AJ**: "What even during the day?"
>
> **Mrs H**: "Yes I don't do as much walking now in those sorts of places, I don't walk very far at all now but I think it's definitely a place that would be unsafe for children, it really is because there's so many trees and shrubs and everything around you can't walk out without your pathways that's got trees and shrubs and..."
>
> **AJ**: "In the questionnaire you were asked to talk about places you particularly disliked in the area and like many other people you picked a pathway as a place you particularly disliked, this was a place in the

local area and you picked the paths and the bridge through Robert's Fold...can you tell, can you explain what it is that you dislike about this route?

Mrs T: "It's very lonely, there again the bushes are over grown, there's a place the we all call the marina which that I mean it used to be lovely when we first moved in it really was nice but they've not bothered with it."

AJ: "So they've not kept it up?"

Mrs T: "No my family don't like me walking home to Birchwood centre because there's been flashers I know one particular girl that it happened to she was coming back from the centre and she's my daughter's age so she's not I mean luckily she could fight him off and away he went but it still happened and it shouldn't."

These comments are representative of the concerns expressed by many of the female and/or elderly respondents who were interviewed.

The respondents' occupation significantly affected their perception of their own personal safety in their own home and garden, and on their street, both during the day time and after dark. Professional respondents consistently gave the highest safety ratings and unemployed respondents consistently gave the lowest ratings, both in and outside Birchwood. As Chapter 5, "Physical and demographic profile of the case study area", page 99) shows, unemployed respondents were more likely to live in the high housing density HCA's. The current chapter (page 232) explains that respondents from the high housing density HCA's were more likely to report crime on their street, and as we have already seen there is a link between perceived occurrence of crime and evaluation of personal safety. It is difficult to say whether it was the perception of a higher incidence of crime in and around the home environment that triggered the insecurity felt by unemployed respondents, or some other factor associated with the circumstances of being unemployed.

The education of the respondents was only significantly associated with their perception of personal safety in their home and garden after dark. Respondents with higher education had the highest safety ratings and respondents who had left school at 18 or below had the lowest. 19 out of the 26 unemployed respondents in the study had left school aged 18 or under and none had any further education.

Emerging themes and ideas

Whilst the vegetation density of the HCA's themselves did not affect respondents' perception of their personal safety in any of the environments tested for in the study (home and garden, street and local area), Birchwood respondents were significantly more likely to feel unsafe in their local area than the respondents from outside. The places they felt unsafe in were "pathways, bridges and underpasses", "green spaces", "local facilities" and "built up areas". Thus it seems that Birchwood's naturalistic woodland structure does contribute to increased feeling of insecurity amongst its residents in specific location in the local area namely "pathways, bridges and underpasses" and "green spaces".

Female respondents from Birchwood felt less safe than male respondents in all of the environments tested for in the study (home and garden, street and local area), and less safe than female respondents from outside Birchwood in their local area.

However, Birchwood respondents were not significantly more likely to identify "pathways, bridges and underpasses" and "green spaces" as unsafe, these kinds of places were also considered unsafe by the respondents from outside Birchwood. "Pathways, bridges and underpasses" have generic characteristics to do with enclosure and isolation, to which woody vegetation may contribute. It seems that Birchwood's footpath system, isolated from the roads, and surrounded in many cases by dense vegetation, was one of the least successful aspects of the district plan; and there is a need to rethink the planning of urban path networks, particularly where naturalistic woodland is the predominant form of landscape.

Whilst "green spaces" were often thought of as unsafe, they were also the most valued places in Birchwood (see Chapter 7, "Place Identity", figure 7.1, page 166), confirming that urban dwellers often hold conflicting feeling towards naturalistic or wilderness like places (Burgess et al, 1988). Whilst steps can be taken to make such places feel safer (Burgess, 1995) they cannot be made to feel completely safe without removing the qualities that attract people to them in the first place.

This study also suggests that whilst fear may engendered by the physical characteristics of a place, it is also powerfully connected with local histories, and the perceived incidence of crime: there are "geographies of fear" that are linked to these experiences and perceptions (Valentine, 1989).

Introduction and research questions

As described in Chapter 4, one of the main concepts underpinning the whole design approach in Birchwood, and particularly in Oakwood, was the idea that the landscapes within and around the housing should provide varied opportunities for children's play. It was felt that providing children with natural areas consisting of robust vegetation, preferably combined with a varied topology, close to their homes would provide an exciting and stimulating environment for them to play in, as well as a chance for them to become more familiar with the natural world.

Whilst there is now a growing body of evidence confirming the developmental benefits to children of play in such surroundings, described in detail in Chapter 2, "Literature Review", page 9, there is also evidence that many parents are reluctant to permit their children to play in them for safety reasons (Valentine, 1997).

The research aimed to establish whether the residents of Birchwood recognise the benefits to children inherent in the proximity of challenging natural environments, or whether concerns regarding children's safety might be preventing them from interacting with the natural environment in Birchwood in the way the designers and planners intended. The research questions underpinning this part of the research can therefore be summarised as:

- What implications does the heavily wooded housing landscape of Birchwood have for the perception of children's safety?
- What is the impact of housing density on this issue?
- How is Birchwood seen by its inhabitants as a place to bring up children?
- What are the impacts of demographic variables such as gender, age, occupation and education on the perception of children's safety?
- Have the designers' and planners' aspirations for Birchwood as an environment for children been met?

Methodology

Questionnaire design

These issues were addressed in Part 5 of the questionnaire, entitled "Children in your local area", which contained eight questions. The first two questions were about whether the respondent had any children under 18, and the gender and age of those children.

The next three questions were about the respondents' perception of children's safety firstly in relation to their own home and garden, then in relation to their street and finally with respect to their local area, and were in the same format as the questions related to adults' safety in Part 4 of the questionnaire. Unlike Part 4, the questions about children's safety did not distinguish between different times of day. This was because, generally speaking, children are not permitted to be out doors after dark.

The respondents were therefore asked (question 21):

21 Generally speaking, how safe do you think children are in the places mentioned below?
Please tick the appropriate box to say how safe you feel they are

21 Generally speaking, how safe do you think children are in the places mentioned below?	Very safe	Safe	Neither safe nor unsafe	Unsafe	Very unsafe
Your home and garden					
Your street					

The places mentioned below were "your home and garden" and "your street". In each case the respondents were asked to "tick the appropriate box to say how safe [they] feel [children] are" using a bi-polar Likert scale consisting of five categories, ranging from "very safe" to "very unsafe".

The next question (question 22) focused on the local area by asking:

22 Apart from your own home, garden and street, are there any places **in your local area** where you believe children would be unsafe? *Please tick the appropriate box*

Yes ☐ No ☐

If "No" please go straight to question 24

The respondents who answered "yes" were invited to identify up to three of these places:

23 If you answered "Yes" to question 22 please identify up to 3 of these places. *Please write their names in the boxes below. Please give enough detail to enable us to find the places ourselves*

1st place
2nd place
3rd place

The next question (question 24) sought to establish whether Birchwood's wooded environment affected the nature of the threat that adults perceived that children might be subjected to. Incidents of child abduction and assault attract enormous media attention and this study aimed to find out whether adults in Birchwood perceive children in the area to be in greater danger from this threat than children from environments with less woody vegetation. Five types of threat to children were identified namely "child abduction/assault", "traffic accident", "bullying", "drugs/alcohol" and "involvement in gangs". These categories were identified by reference to previous research (Valentine, 1997), the exploratory interviews and visits carried out in this study (Chapter 3, "Methodology", page 33) and anecdotal

evidence. The respondents were asked to rank these categories in order of their perceived risk to children in the local area:

> 24 Which of the following do you think is the greatest danger to children **in your local area?** *Please put 1 in the box against the greatest danger, 2 in the box against the next greatest danger, and so on until you get to 5. Please put 5 in the box against the least danger*

Child abduction/assault ☐

Traffic accident ☐

Bullying ☐

Drugs/alcohol ☐

Involvement in gangs ☐

The last two questions in Part 5 related to the respondents perception of Birchwood as a place to bring up children. Question 25 simply asked:

> 25 All things considered do you feel that your local area is a good place to bring up children?

Yes ☐ No ☐

The respondents were then requested to amplify their answer to question 25 by answering an open-ended question:

> 26 Which aspects of your local area make it a good/bad place to bring up children?
> *Please write your answer in the space below*

Data analysis

The data from question 21 was converted to two ordinal variables, one for "your home and garden" and one for "your street". These variables had five values between 1 and 5 reflecting the categories on the Likert scale, where 5 was "very safe" and 1 was "very unsafe".

The data from question 22 was converted into a nominal (binary) variable where 1 was "yes" and 2 was "no" (denoting that there were or were not places in the local area where the respondent believed their children would be unsafe).

The replies to question 23, in which respondents were requested to identify up to three unsafe places, if they had answered "yes" to the previous question, were sorted into seven categories namely "local facilities", "roads and motorways", "built-up areas", "large built structures", "pathways, bridges and underpasses", green spaces" and "other". Again only the respondents' first named places were used, in order to simplify the analysis as much as possible. The classification was the same as the one used in relation to the respondents' choice of unsafe places for adults (see Chapter 8, "Safety", page 197, for a description of the categories). Once again, the "other" category was a fairly loose collection of different responses that were difficult to relate to a particular geographical location, such as "anywhere and everywhere these days".

The data from question 23 was converted into eight separate variables, details of which are set out in table 9.1: one nominal (categorical) variable with seven values reflecting each of the seven categories; and seven nominal (binary) variables where the values 1 and 2 indicated whether the respondent's reply fell within or outside of one particular category. The nominal (categorical) variable was used to compare the relative frequency with which different types of unsafe places were chosen, whereas the nominal (binary) variables were used to look at the effect of variations in the experimental or independent variables (e.g. vegetation density) on the respondent's tendency to choose each particular type of unsafe place (e.g. "roads and motorways").

Type of variable	Values represent	Number of variables
Nominal (categorical)	1="local facilities" 2="roads and motorways" 3="built-up areas" 4="large built structures" 5="pathways, bridges and underpasses" 6="green spaces" 7= "other"	1
Nominal (binary)	1= Type of place respondent considered unsafe e.g. "local facilities" 2= Where the respondent had picked one of the other six categories	7

Table 9.1 Variables relating to data from questions 15 and 18

The data from question 24 was made into five variables, one for each of the five categories "child abduction/assault", "traffic accident", "bullying", "drugs/alcohol" and "involvement in gangs". These were ordinal variables with values between 1 and 5, reflecting the order in which the respondents had placed the five categories, where 1 was "least danger" and 5 was "greatest danger". The numerical values given by the respondents were reversed to make the data more legible in visual representations such as bar charts.

The data from question 25 was made into a nominal (binary) variable with values 1 and 2, where 1 signified that the respondent's local area was a good place to bring up children and 2 signified that it was not.

Several attempts were made to categorise the data from the open-ended question, question 26, in which respondents were asked to state their reasons for their local area being a good or bad place to bring up children, so as to make it susceptible to testing for statistical significance, but none of these

attempts proved effective. The difficulties were caused by respondents giving several reasons for their points of view, and by some respondents believing that their local area was a simultaneously good and bad place to bring up children. It was concluded that descriptive analysis was more suited to the data generated by this particular question. Thus the comments were placed in categories, which were then converted into 11 nominal (binary) variables with values 1 and 2, where the values 1 and 2 indicated whether the respondent's reply fell within or outside of one particular category. Where a respondent referred to several different aspects, covering more than one category, then all the appropriate categories or variables were checked. These variables were then subjected to frequency analysis against different geographical units such as HCA's and districts with a view to establishing whether there was any pattern or consensus. The categories used, and an explanation of their content are set out in table 9.2:

Variables	Description
Good community	Good local community
Anti-social behaviour	Local residents engaged in crime or other anti-social activities
Traffic/pollution	Concern over levels of traffic and pollution from traffic
Good facilities	Good facilities for children and/or young people e.g. youth clubs
Insufficient facilities	Insufficient facilities for children and/or young people
Good accessible schools	Local schools considered to be good and/or easy to access
Poor schools/ not accessible	Local schools considered poor and/or difficult to access
Local green space/green setting	Characteristics of green spaces or green setting
Street/Estate layout	Local street layout makes them safe for children
Too many bushes and trees	Vegetation poses safety risk to children
Other	Miscellaneous answers, e.g. "The problems which are apparent here seem to be everywhere. Perhaps it is on a lesser scale here."

Table 9.2 Variables and their descriptions from question 26

All the variables from the questions in Part 5 were then tested for statistical significance against the independent variables: vegetation and housing density, HCA, district and location in relation to Birchwood, and the demographic variables gender, age occupation and education; apart from the nominal categorical variable from question 23, and the nominal (binary) variables from question 26, which were just used for descriptive analysis. A further analysis was also carried out to see if the existence of children under 18 in the family had any significant impact on any of the dependent variables. The respondents were asked whether they had any children under 18 (question 19). Their replies were then converted to a nominal (binary) variable with the values 1 and 2 signifying that they did or did not have children under 18. This variable was then tested for statistical significance against all the dependent variables relating to children.

Four different statistical tests were used to carry out this analysis, as explained above in tables 3.8 and 3.9 (Chapter 3, "Methodology", pages 47 and 48).

Design and analysis of the in-depth interviews

The main relevance of the interviews the issues relating to children was as an opportunity to ask respondents to elaborate on their questionnaire replies dealing with children's safety on the street, and

in specific locations in the local area. It was also a chance to talk more generally about the way in which children used local green spaces and the factors that prevented them from doing so.

As previously indicated, sample interview schedules are annexed in Appendix 5 and 6, and the method of analysis of the interview data is explained above, in Chapter 3, "Methodology", page 52.

Results

Question 21- How safe do you think children are in your home and garden? How safe do you think children are in your street?

Differences between HCA's and districts in Birchwood and the impact of vegetation and housing density

The HCA in which the respondents lived had no significant impact on their evaluation of children's safety whilst in the respondents' home and garden, and whilst this variable was significantly correlated with both the vegetation density and the housing density of the HCA's, the correlation coefficients in both cases were somewhat low (table 9.3)

On the other hand, HCA was significantly associated with variations in the respondents' evaluation of children's safety whilst in the respondents' street (table 9.3). There was a significant trend for safety ratings from higher vegetation and housing density HCA's to be lower than those from lower vegetation and housing density HCA's (table 9.3, and figures 9.1 and 9.2). However, the correlation coefficients were once again rather low, and the trends were not straightforward.

Variable	Home and garden or street	Test used	Test result
HCA	Home and garden	Kruskal-Wallis	Chi-Square = 14.147; df = 8; NS.
Vegetation density	Home and garden	Spearmans correlation	r_s = -0.174; n = 241; p = 0.007.
Housing density	Home and garden	Spearmans correlation	r_s = -0.143; n = 241; p = 0.026.
HCA	Street	Kruskal-Wallis	Chi-Square = 25.206; df = 8; p = 0.001.
Vegetation density	Street	Spearmans correlation	r_s = -0.205; n = 243; p = 0.001.
Housing density	Street	Spearmans correlation	r_s = -0.206; n = 243; p = 0.001.
District	Home and garden	Kruskal-Wallis	Chi-square = 6.521; df = 2; p = 0.038.
District	Street	Kruskal-Wallis	Chi-square = 13.538; df = 2; p = 0.001.

Table 9.3 Effect of HCA, vegetation density, housing density and district on respondents' evaluation of their children's safety in their home and garden, and street

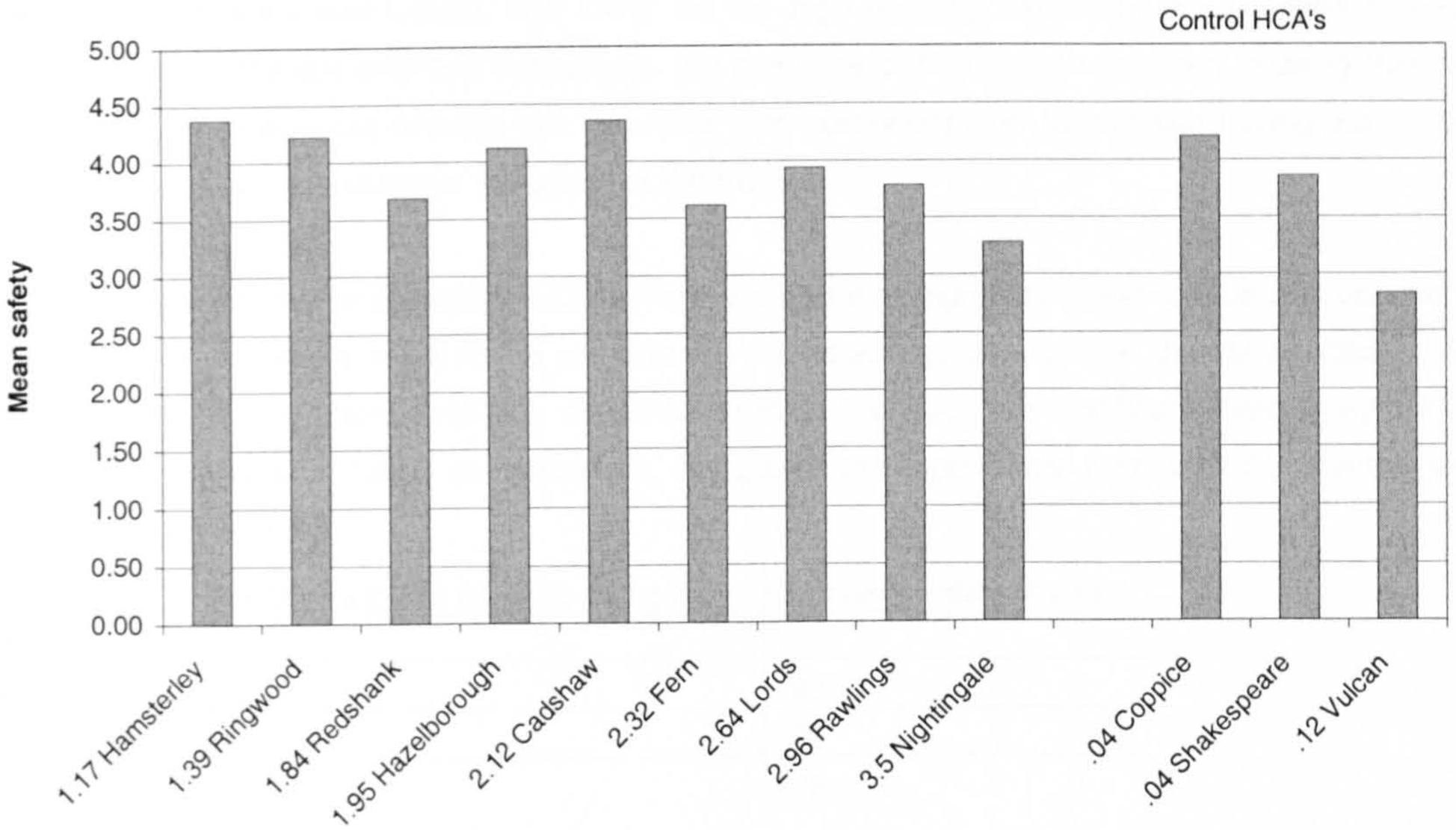

Figure 9.1 Effect of vegetation density on respondents' evaluation of children's safety in their street

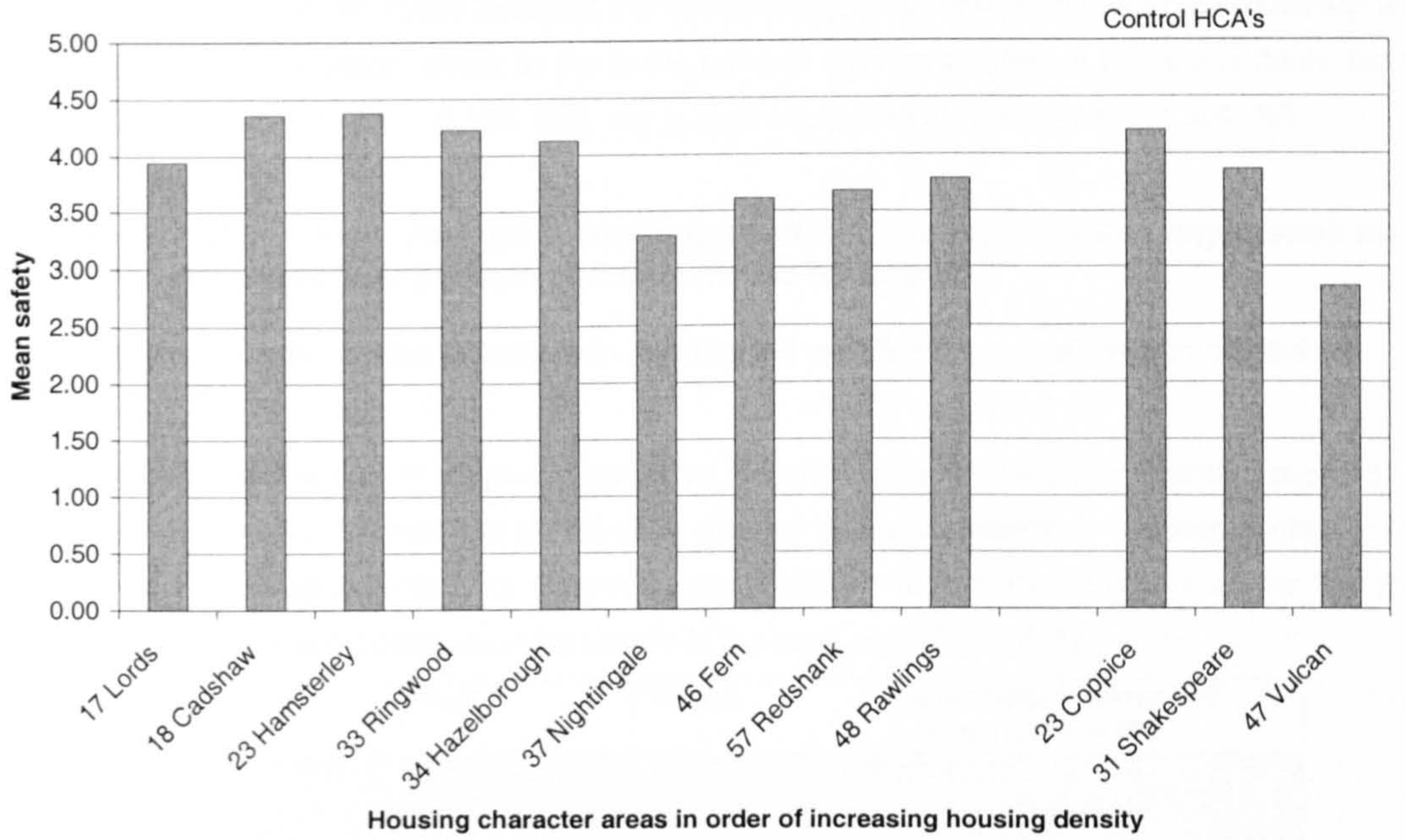

Figure 9.2 Effect of housing density on respondents' evaluation of children's safety in their street

Figure 9.1 shows that the anomalies in the trend for the safety ratings to decline as vegetation density increases, can be accounted for largely by the competing trend linked to housing density. Within each group of low, medium and high vegetation density HCA's the safety ratings are associated with the housing density of the HCA's. Thus the ratings are generally higher for the low housing density HCA's

(Hamsterley, Cadshaw and Lords), and lower for the high housing density HCA's (Redshank, Fern and Rawlings). There are only two exceptions: the positions of Nightingale (medium housing density) and Rawlings (high housing density) are reversed, with respondents in Nightingale having the lowest mean rating for children's safety in the street in Birchwood.

The district in which the respondents' HCA's were situated was significantly associated with variations in the ratings for children's safety in the respondents' home and garden, and on their street (table 9.3). A familiar pattern once again emerges: respondents from Oakwood are significantly less likely to feel that children are safe in these environments, compared to respondents from Locking Stumps and Gorse Covert (table 9.4).

	Children's safety in home and garden	Children's safety in street
District	Mean	Mean
Oakwood	4.30	3.62
Locking Stumps	4.44	3.92
Gorse Covert	4.64	4.25

Table 9.4 Effect of district on respondents' evaluation of their children's safety in their home and garden, and street

Comparison between respondents living in Birchwood and the control group from outside

There was no significant difference between the safety ratings of the respondents from Birchwood and the control group from outside, either in the in the case of children's safety in the respondents' home and garden (Mann- Whitney z = -0.136; NS), nor in their street (Mann- Whitney z = -1.561; NS).

Question 22- "Apart from your own home, garden and street, are there any places in your local area where you believe children would be unsafe?"

Differences between HCA's and districts in Birchwood and the impact of vegetation and housing density

The respondents' perception of children's safety in the local area did vary significantly according to which HCA they lived in; but was not significantly affected by the vegetation or housing density of the HCA's (table 9.5). Respondents from Ringwood and Hazelborough were far less likely to feel that there were places where children would be unsafe in the local area (figure 9.3).

Variable	Test	Result	Exact significance = E Monte Carlo = MC
HCA	Chi- Square	$x^2 = 19.538$; df = 8; p = 0.012.	
Vegetation density	Mann-Whitney	Z = -0.786; NS.	
Housing density	Mann-Whitney	Z = -0.762; NS.	
District	Chi- Square	$x^2 = 8.924$; df = 2; p = 0.012.	

Table 9.5 Effect of HCA, vegetation and housing density and district on respondents' tendency to identify unsafe places for children in the local area

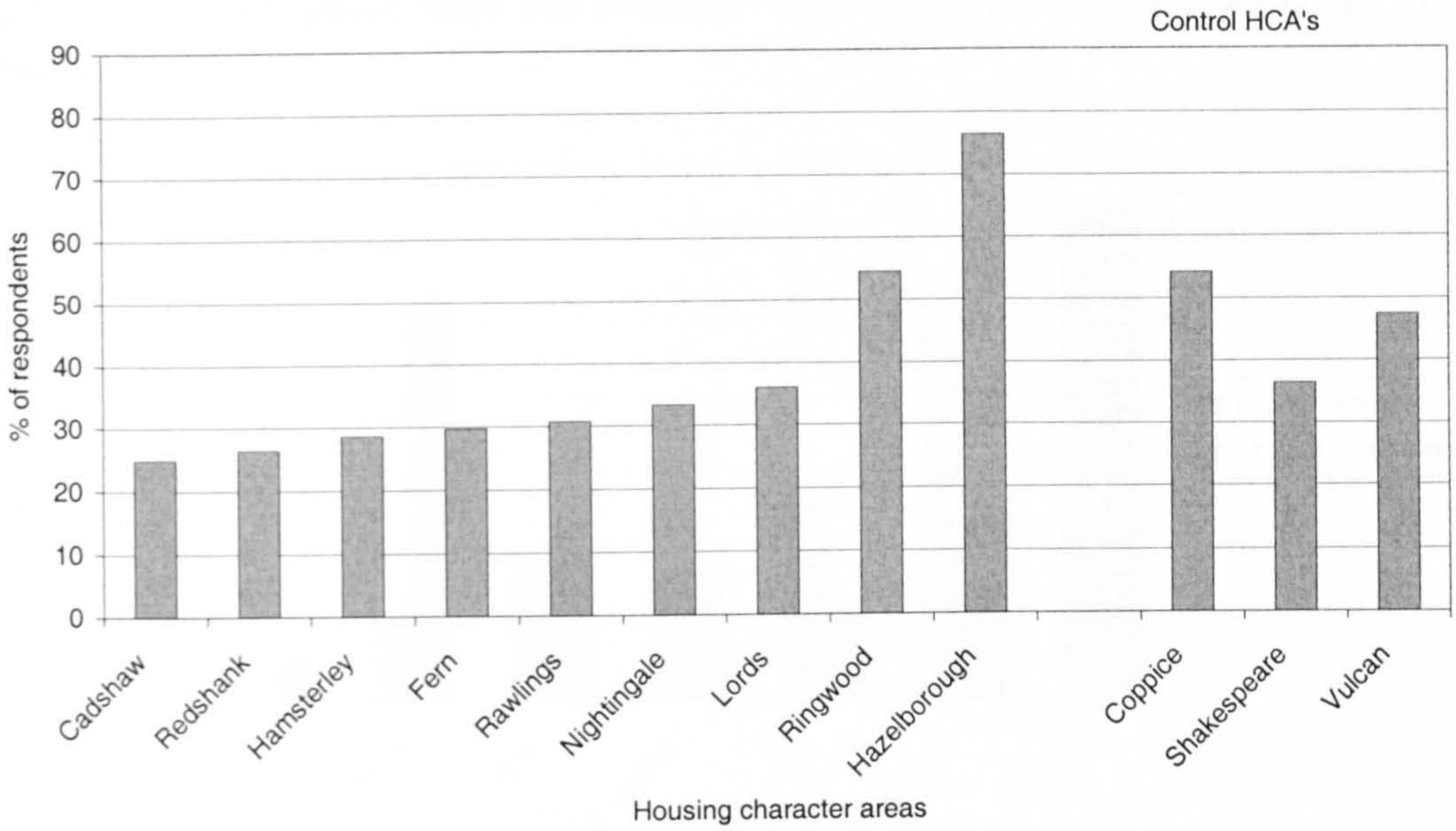

Figure 9.3 Effect of HCA on respondents' tendency to identify unsafe places for children in the local area (bar chart shows respondents who did NOT identify any unsafe places)

The views held by the respondents from Ringwood and Hazelborough partly explain why district also has a significant impact on the respondents' perception of safety (table 9.5). Once again it was the respondents from Gorse Covert, in which Ringwood and Hazelborough are situated, who felt most confident regarding children's safety in the local area (table 9.6).

"Are there any places in your local area where you believe children would be unsafe?"	Yes	No
District	%	%
Oakwood	70	30
Locking Stumps	69	31
Gorse Covert	48	52

Table 9.6 Effect of district on respondents' tendency to identify unsafe places for children in the local area

Comparison between respondents living in Birchwood and the control group from outside

Whether the respondents lived in or outside Birchwood had no significant impact on their perception of children's safety in the local area Chi-Square $x^2 = 2.363$; df = 1; NS.

Question 23- If you answered "Yes" to question 22 please identify up to three of these places. (Question 22- Apart from your own home, garden and street, are there any places in your local area where you believe children would be unsafe?)

As described in the "Methodology" section, above (page 242), the replies to this open question were sorted into seven categories namely "local facilities", "roads and motorways", "built-up areas", "large built structures", "pathways, bridges and underpasses", "green spaces" and "other". Respondents across the whole sample were most likely to feel that "green spaces" (32%) and "pathways, bridges and underpasses" (23%) were places in the local area that were unsafe for children (figure 9.4). As

only two respondents picked "large built structures" this category was not subjected to any further statistical analysis.

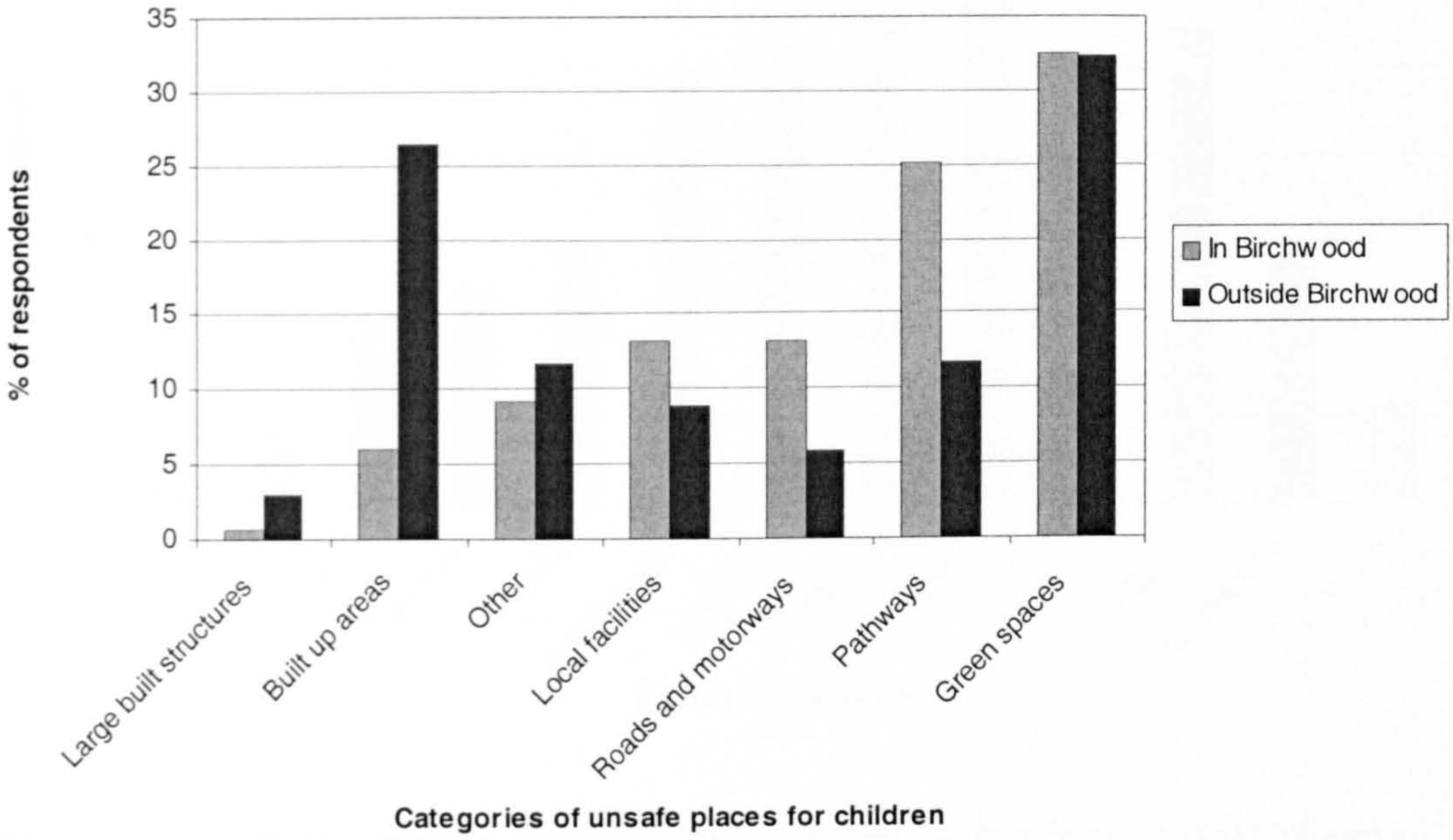

Figure 9.4 Effect of location in relation to Birchwood on respondents' choice of unsafe places for children in the local area

"Green spaces"

Differences between HCA's and districts in Birchwood and the impact of vegetation and housing density

The respondents' tendency to pick "green spaces" as unsafe places for children in the local area varied significantly according to their HCA, but not according to the vegetation or housing density of the HCA (table 9.7). There was a surprising range of attitudes: whereas only 7% of respondents from Nightingale believed that local "green spaces" were unsafe for children, 67% of respondents from Rawlings held this view (figure 9.5).

Variable	Day time or after dark	Test used	Test result	Exact significance= E Monte Carlo significance= MC
HCA	Day time	Chi-square	$x^2 = 25.027$; df = 8; p = 0.001.	MC
Vegetation density	Day time	Mann-Whitney	z = -0.872; NS.	
Housing density	Day time	Mann-Whitney	z = -.1.450; NS.	
District	Day time	Chi-Square	$x^2 = 8.849$; df = 2; p = 0.012.	

Table 9.7 Effect of HCA, vegetation and housing density and district on respondents' tendency to identify "green spaces" as unsafe places for children in the local area

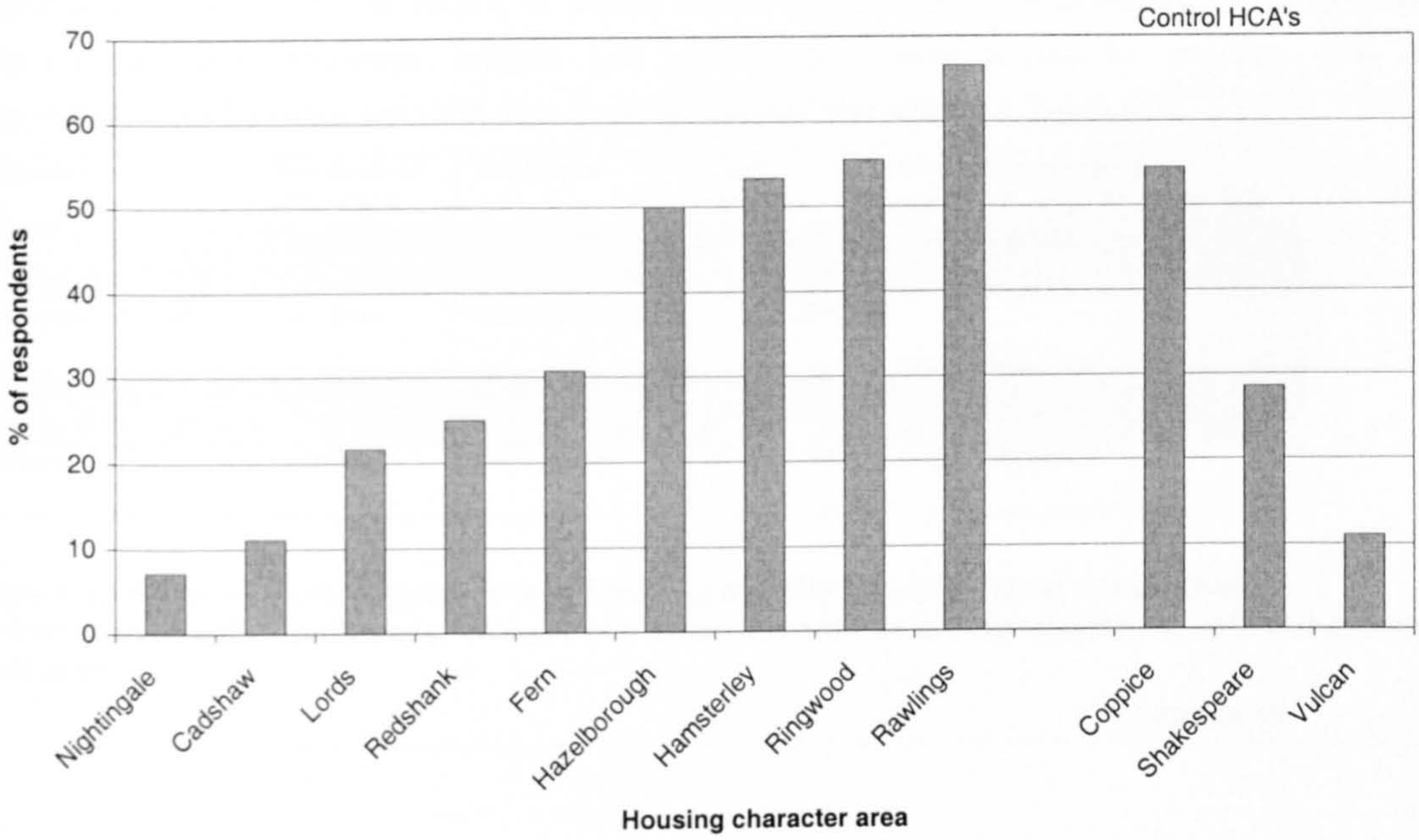

Figure 9.5 Respondents' tendency to identify "green spaces" as unsafe places for children in the local area

It is noteworthy that the respondents from all three HCA's in Gorse Covert (Hazelborough, Hamsterley and Ringwood) felt particularly strongly about this issue. Fifty per cent or more of these respondents believed that local green spaces were unsafe for children, and this explains why the district in which the HCA's were situated had a significant impact on their perception of this issue (tables 9.7 and 9.8).

Local "Green spaces"-unsafe places for children	
District	**%**
Locking Stumps	22
Oakwood	34
Gorse Covert	54

Table 9.8 Effect of district on respondents' tendency to identify local "green spaces" as unsafe places for children

Comparison between respondents living in Birchwood and the control group from outside

However, whether the respondents lived in or outside Birchwood did not affect their tendency to identify local "green spaces" as unsafe places for children (Chi-Square $x^2 = 0$; df = 1; NS.).

"Pathways, bridges and underpasses"

Differences between HCA's and districts in Birchwood and the impact of vegetation and housing density

The respondents' tendency to pick local "pathways, bridges and underpasses" as unsafe places for children also varied significantly according to their HCA, but not according to its vegetation or housing density (table 9.10). Again, there was a surprising range of attitudes: whereas none of the

respondents from any of the HCA's in Gorse Covert (Hazelborough, Hamsterley and Ringwood) believed that local "pathways, bridges and underpasses" were unsafe for children, 50% of respondents from Cadshaw (an HCA from Locking Stumps) held this view (figure 9.6).

Variable	Day time or after dark	Test used	Test result	Exact significance= E Monte Carlo significance= MC
HCA	Day time	Chi-square	$x^2 = 21.581$; df = 8; p = 0.005.	MC
Vegetation density	Day time	Mann-Whitney	z = -1.257; NS.	
Housing density	Day time	Mann-Whitney	z = -.1.300; NS.	
District	Day time	Chi-Square	$x^2 = 14.779$; df = 2; p = 0.001.	

Table 9.10 Effect of HCA, vegetation and housing density and district on respondents' tendency to identify "pathways, bridges and underpasses" as unsafe places for children in the local area

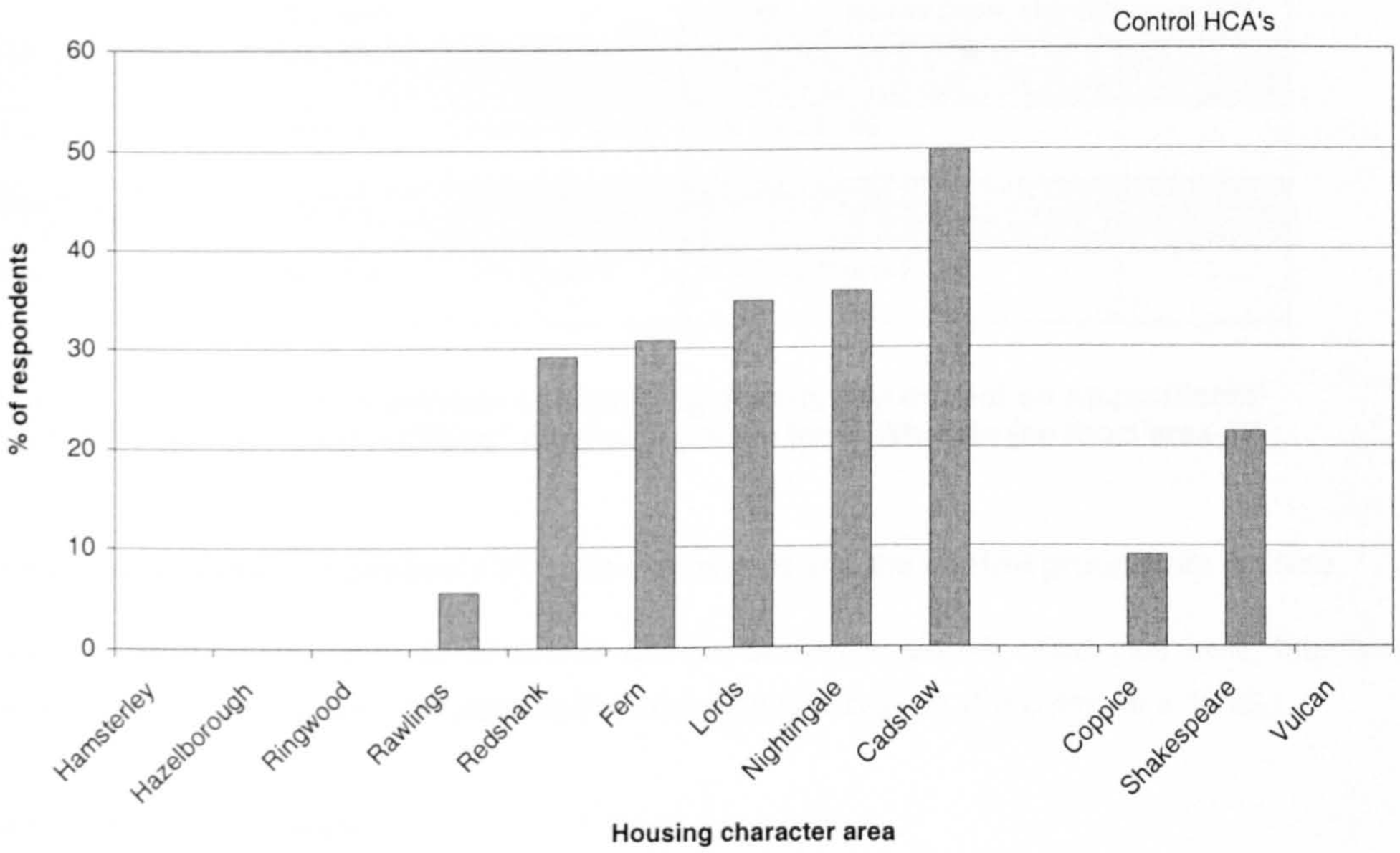

Figure 9.6 Respondents' tendency to identify "pathways, bridges and underpasses" as unsafe places for children in the local area

Once again, the district in which the HCA's were situated had a significant impact on their perception of this issue (tables 9.10 and 9.11) but this time it was the respondents from Locking Stumps who were concerned about their children's safety on local "pathways, bridges and underpasses".

Local "pathways, bridges and underpasses"- unsafe places for children	
District	%
Gorse Covert	0
Oakwood	23
Locking Stumps	37

Table 9.11 Effect of district on respondents' tendency to identify local "pathways, bridges and underpasses" as unsafe places for children

Comparison between respondents living in Birchwood and the control group from outside

Once again, whether the respondents lived in or outside Birchwood did not affect their tendency to identify local "pathways, bridges and underpasses" as unsafe places for children (Chi-Square x^2 = 2.840; df = 1; NS.).

"Local facilities"

Differences between HCA's and districts in Birchwood and the impact of vegetation and housing density

Neither the HCA of the respondents, nor its vegetation or housing density, nor the district in which the HCA's were situated, had any impact on their tendency to identify such places as unsafe places for children (table 9.12).

Variable	Day time or after dark	Test used	Test result	Exact significance= E Monte Carlo significance= MC
HCA	Day time	Chi-square	x^2 = 4.749; df = 8; NS.	
Vegetation density	Day time	Mann-Whitney	z = -1.329; NS.	
Housing density	Day time	Mann-Whitney	z = -0.116; NS.	
District	Day time	Chi-Square	x^2 = 1.027; df = 2; NS.	

Table 9.12 Effect of HCA, vegetation and housing density and district on respondents' tendency to identify "local facilities" as unsafe places for children in the local area

Comparison between respondents living in Birchwood and the control group from outside

Further, whether the respondents lived in or outside Birchwood did not affect their belief that "local facilities" were unsafe places for children in the local area (Chi-Square x^2 = 0.498; df = 1; NS.).

"Roads and motorways"

Differences between HCA's and districts in Birchwood and the impact of vegetation and housing density

Neither the HCA of the respondents, nor its vegetation density, had any impact on their tendency to identify such places as unsafe places for children (table 9.13). On the other hand, respondents from lower housing density HCA's were significantly more likely to feel that such places posed a threat to children, although the trend was far from straightforward (table 9.13 and figure 9.7).

Variable	Day time or after dark	Test used	Test result	Exact significance= E Monte Carlo significance= MC
HCA	Day time	Chi-square	x^2 = 12.301; df = 8; NS.	
Vegetation density	Day time	Mann-Whitney	z = -1.340; NS.	
Housing density	Day time	Mann-Whitney	z = -2.204; p = 0.027.	
District	Day time	Chi-Square	x^2 = 6.601; df = 2; p = 0.039.	**MC**

Table 9.13 Effect of HCA, vegetation and housing density and district on respondents' tendency to identify local "roads and motorways" as unsafe places for children

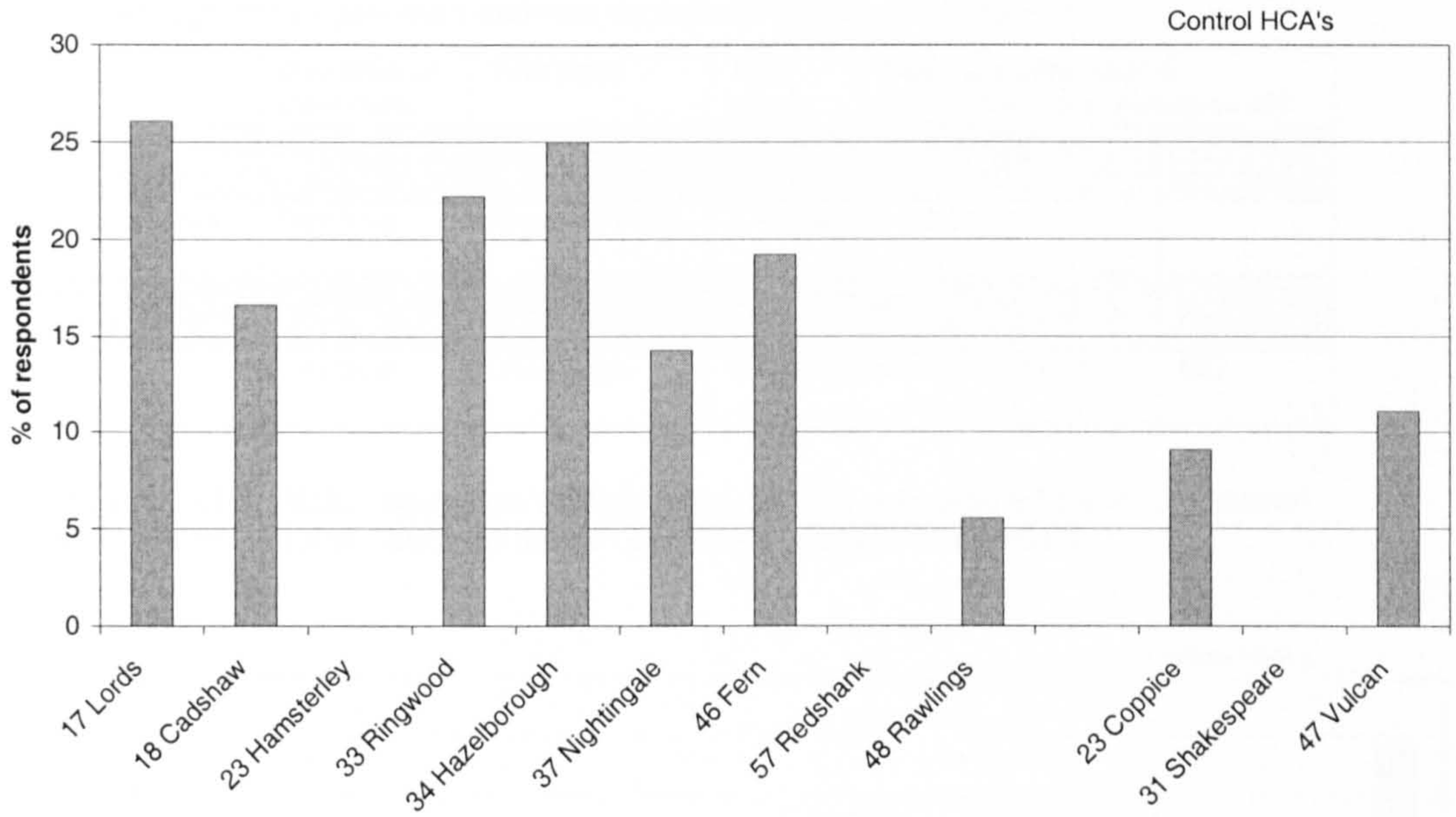

Figure 9.7 Effect of housing density on respondents' tendency to identify local "roads and motorways" as unsafe places for children

Again, the district in which the HCA's were situated had a significant impact on their perception of this issue (tables 9.13 and 9.14), and again it was the respondents from Locking Stumps who were concerned about the threat posed to children by local "roads and motorways".

Local "roads and motorways"- unsafe places for children	
District	%
Oakwood	5
Gorse Covert	11
Locking Stumps	21

Table 9.14 Effect of district on respondents' tendency to identify local "roads and motorways" as unsafe places for children

Comparison between respondents living in Birchwood and the control group from outside

Whether the respondents lived in or outside Birchwood did not affect their belief that local "roads and motorways" posed a threat to children (Chi-Square $x^2 = 1.436$; df = 2; NS).

"Built-up areas"

Differences between HCA's and districts in Birchwood and the impact of vegetation and housing density

Neither the HCA of the respondents, nor its housing density, had any impact on their tendency to identify such places as unsafe places for children (table 9.15). On the other hand, respondents from lower vegetation density HCA's were significantly more likely to feel that such places posed a threat to children, although once again the trend was far from straightforward (figure 8).

Variable	Day time or after dark	Test used	Test result	Exact significance= E Monte Carlo significance= MC
HCA	Day time	Chi-square	$x^2 = 14.267$; df = 8; NS.	
Vegetation density	Day time	Mann-Whitney	z = -2.454; p = 0.014.	
Housing density	Day time	Mann-Whitney	z = -0.829; p < . NS.	
District	Day time	Chi-Square	$x^2 = 5.988$; df = 2; p = 0.047.	**MC**

Table 9.15 Effect of HCA, vegetation and housing density and district on respondents' tendency to identify local "built up areas" as unsafe places for children

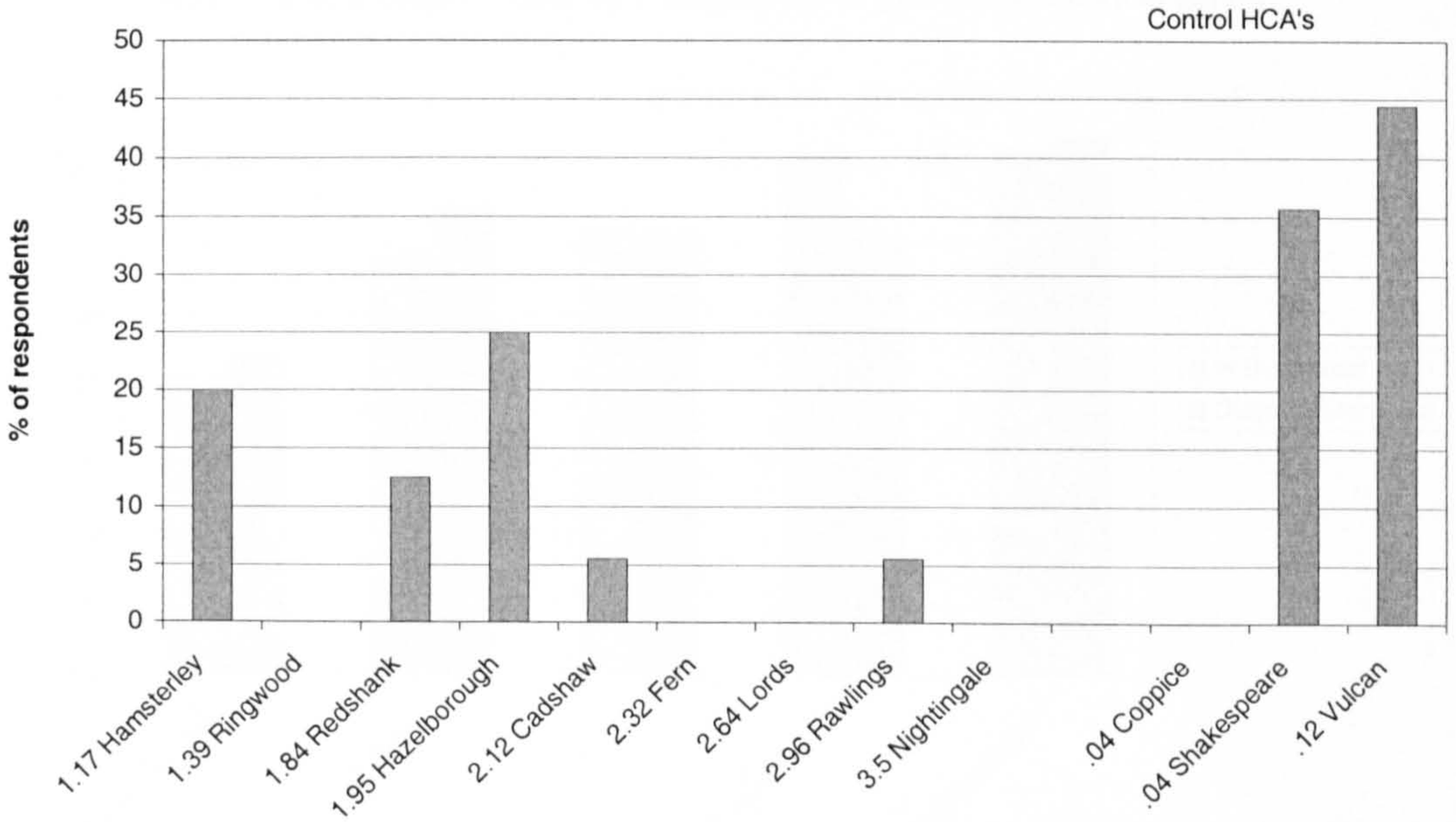

Figure 9.8 Effect of vegetation density on respondents' tendency to identify local "built-up areas" as unsafe places for children

Again, the district in which the HCA's were situated had a significant impact on their perception of this issue (tables 9.15 and 9.16) and this time it was the respondents from Gorse Covert who were concerned about the threat posed to children by local "built up areas".

Local built up areas- unsafe places for children

District	%
Locking Stumps	1
Oakwood	7
Gorse Covert	14

Table 9.16 Effect of district on respondents' tendency to identify local "built-up areas" as unsafe places for children

Comparison between respondents living in Birchwood and the control group from outside

"Built-up areas" was the only type of place identified in response to this question whose selection was significantly associated with the respondents' location in relation to Birchwood: Chi-Square x^2 = 13.292; df = 1; $p < 0.0001$ (exact significance used). Whereas 27% of the control sample of respondents from outside Birchwood felt that such places were unsafe for children, only 6% of the sample from within Birchwood did so.

Question 24- "Which of the following do you think is the greatest danger to children in your local area?"

As explained earlier (page 240) the respondents were requested to rank five potential dangers to children to show which were the greatest threats in their local area. These were: "child abduction/assault", "traffic accident", "bullying", "drugs/alcohol" and "involvement in gangs".

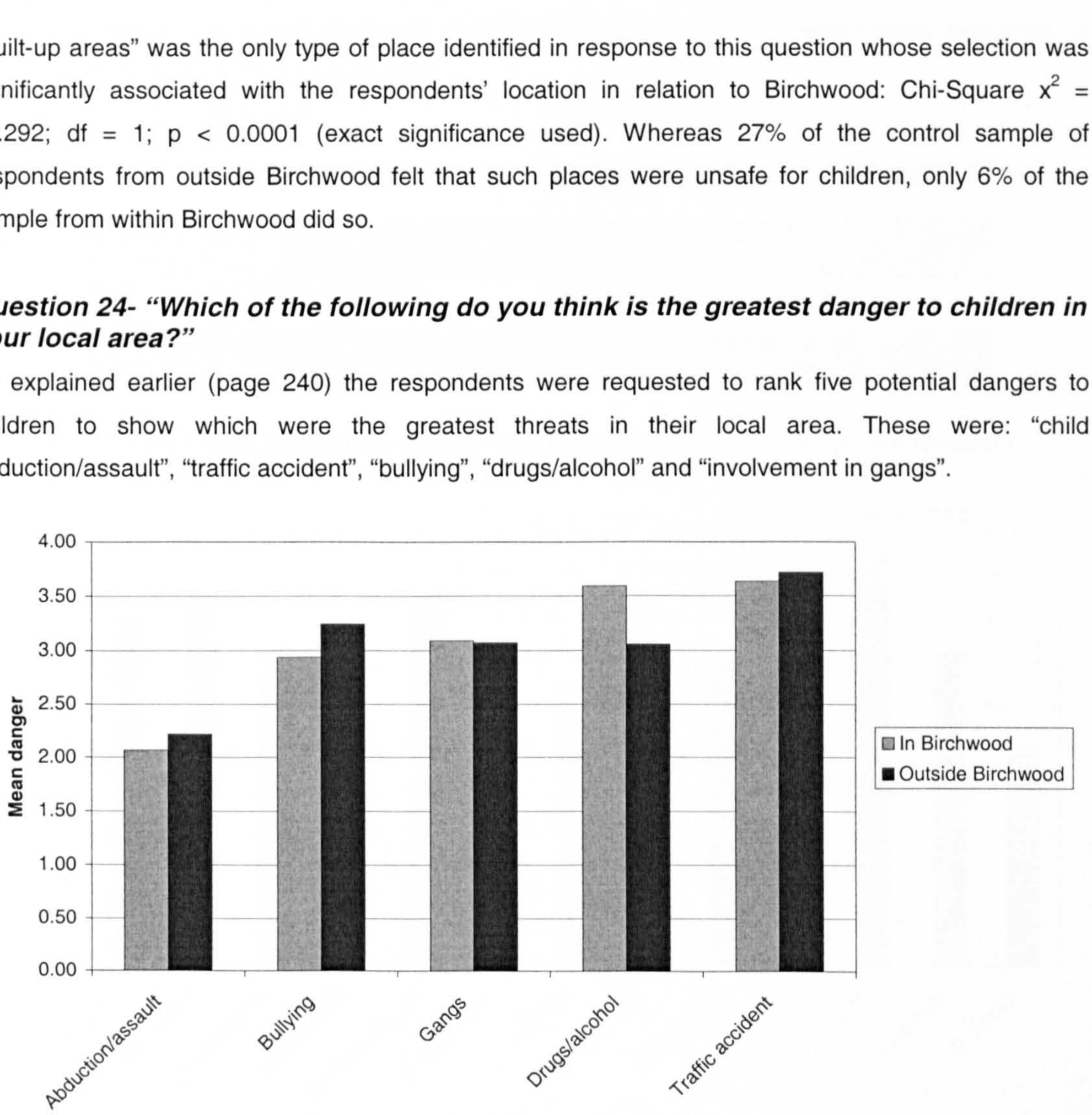

Figure 9.9 Effect of location in relation to Birchwood on respondents' evaluation of dangers to children in the local area

Respondents across the entire sample felt that "traffic accident", followed by "drugs and alcohol", constituted the greatest dangers, with "abduction/assault" being viewed as the least danger (figure 9.9).

"Traffic accident"

Differences between HCA's and districts in Birchwood and the impact of vegetation and housing density

The HCA of the respondents had a significant impact on their evaluation of the danger posed to children in the local area by "traffic accident" (table 9.17). Respondents from lower housing density HCA's were significantly more likely to regard "traffic accident" as a greater problem in their local area (table 9.17, figure 9.10). However, the correlation coefficient was low (-0.224), and this trend was not particularly strong. The vegetation density of the HCA's had no impact on respondents' perception of the danger from traffic accident (table 9.17).

Variable	Test used	Test result
HCA	Kruskal-Wallis	Chi-Square = 17.940; df = 8; p = 0.022.
Vegetation density	Spearmans correlation	r_s = -0.011; n = 209; NS.
Housing density	Spearmans correlation	r_s = -0.224; n = 209; p = 0.001.
District	Kruskal-Wallis	Chi-square = 3.792; df = 2; NS.

Table 9.17 Effect of HCA, vegetation density, housing density and district on respondents' evaluation of the danger posed to children in the local area by "traffic accident"

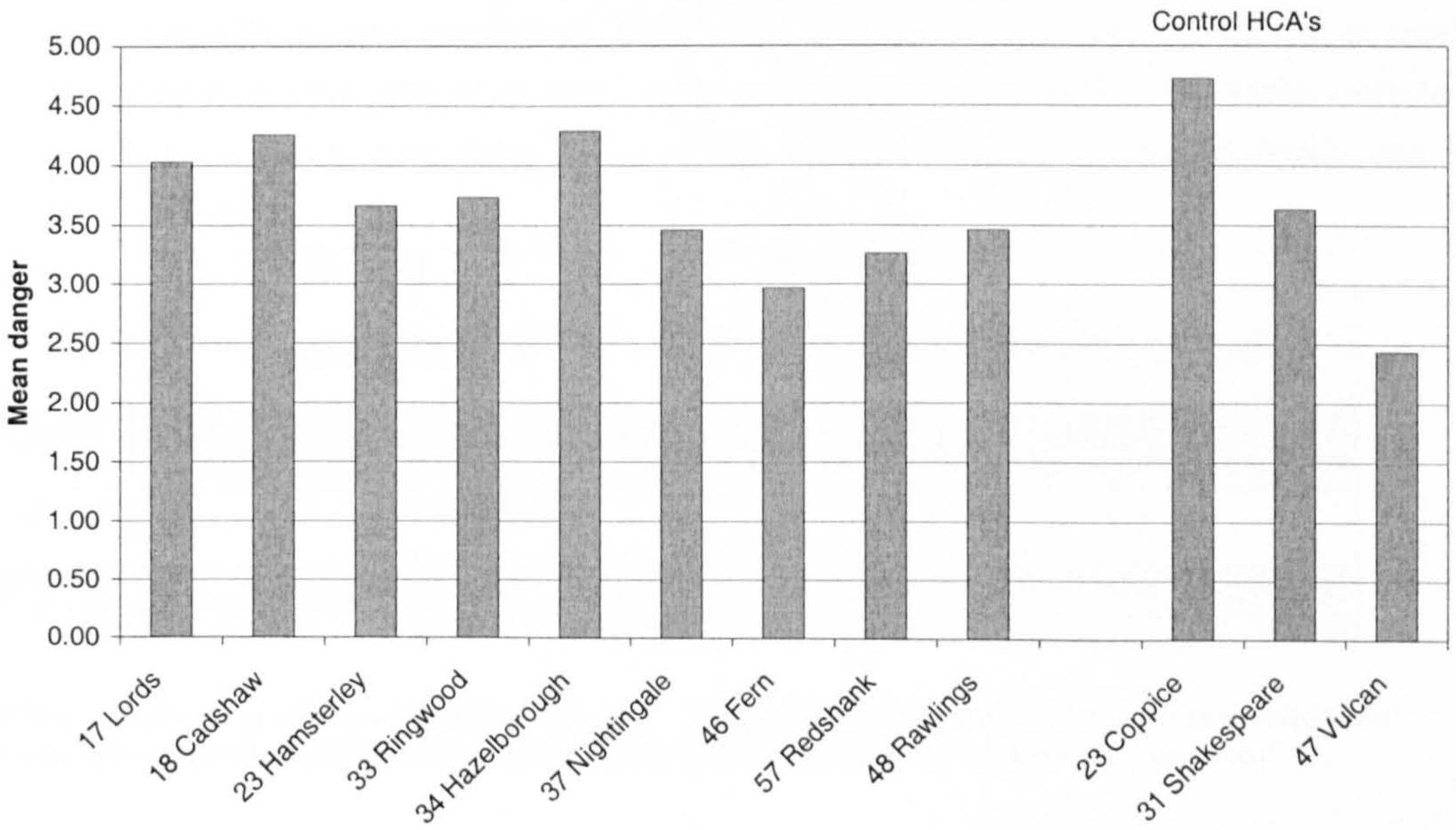

Figure 9.10 Effect of housing density on respondents' evaluation of the danger posed to children in the local area by "traffic accident"

The district in which the respondents' HCA's were situated also had a significant impact on their evaluation of the danger to children from traffic in the local area. Respondents from Gorse Covert and Locking Stumps saw traffic as a greater danger to children than their counterparts from Oakwood (tables 9.17 and 9.18).

Traffic accident- danger posed to children in the local area

District	Mean
Oakwood	3.38
Locking Stumps	3.71
Gorse Covert	3.85

Table 9.18 Effect of district on respondents' evaluation of the danger posed to children in the local area by "traffic accident"

Comparison between respondents living in Birchwood and the control group from outside

Whether the respondents lived inside or outside Birchwood had no significant effect on their perception of the danger to children from traffic in the local area: Mann-Whitney z = -0.488; NS. The trend for respondents from lower housing density HCA's to regard traffic as a more serious problem was repeated in the control sample from outside Birchwood.

"Drugs and alcohol"

Differences between HCA's and districts in Birchwood and the impact of vegetation and housing density

The HCA of the respondents had a significant impact on their evaluation of the danger posed to children in the local area by "drugs and alcohol" (table 9.19). Respondents from higher vegetation and housing density HCA's were significantly more likely to regard "drugs and alcohol" as a greater problem in their local area (table 9.19, figures 9.11 and 9.12). In both cases the correlation coefficients were low and the trends were rather weak, though the association with housing density was the stronger of the two.

Variable	Test used	Test result
HCA	Kruskal-Wallis	Chi-Square = 31.465; df = 8; p < .0001.
Vegetation density	Spearmans correlation	r_s = -0.205; n = 201; p = 0.004.
Housing density	Spearmans correlation	r_s = -0.256; n = 201; p < .0001.
District	Kruskal-Wallis	Chi-square = 16.872; df = 2; p < .0001.

Table 9.19 Effect of HCA, vegetation density, housing density and district on respondents' evaluation of the danger posed to children in the local area by "drugs and alcohol"

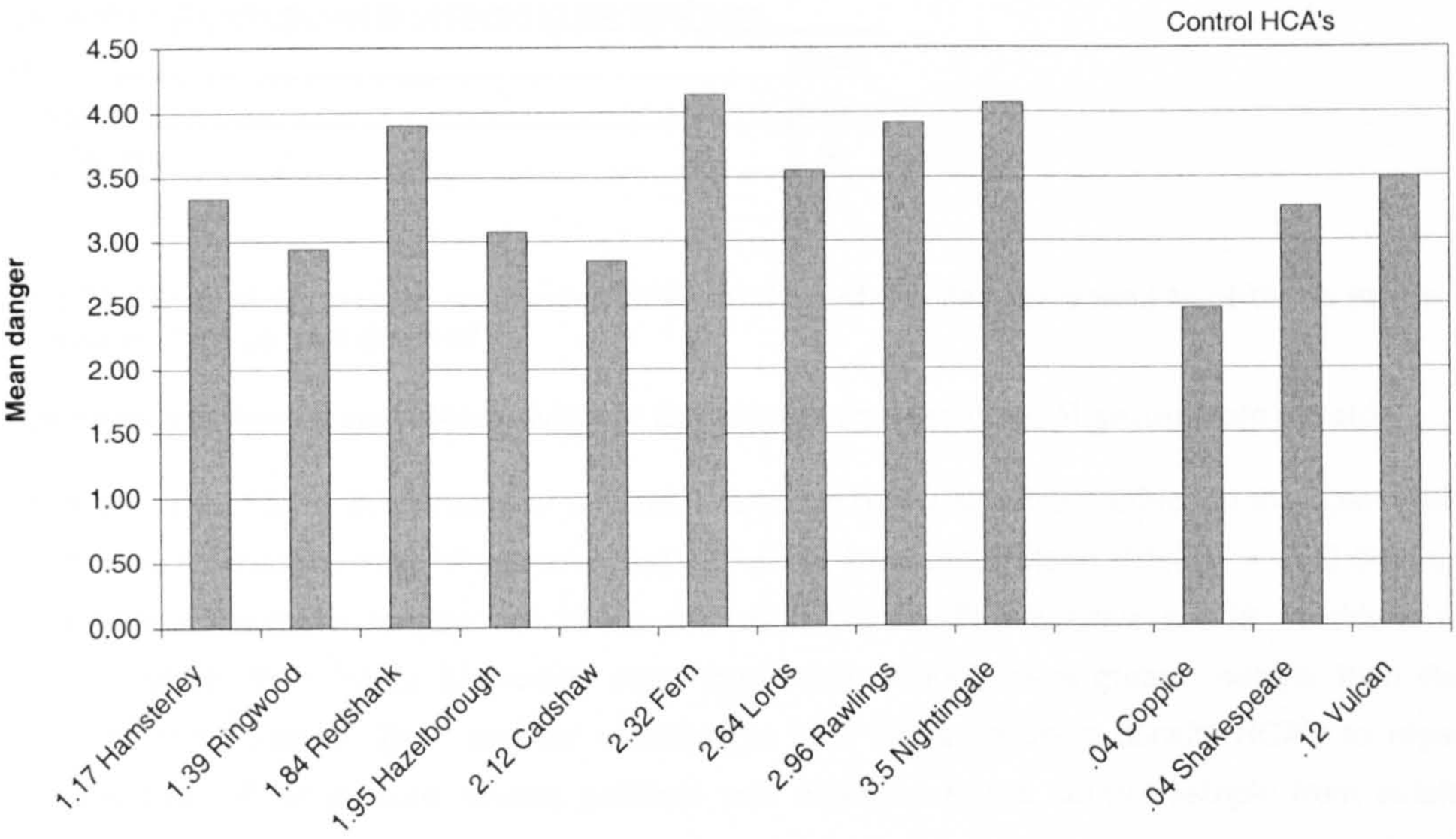

Figure 9.11 Effect of vegetation density on respondents' evaluation of the danger posed to children in the local area by "drugs and alcohol"

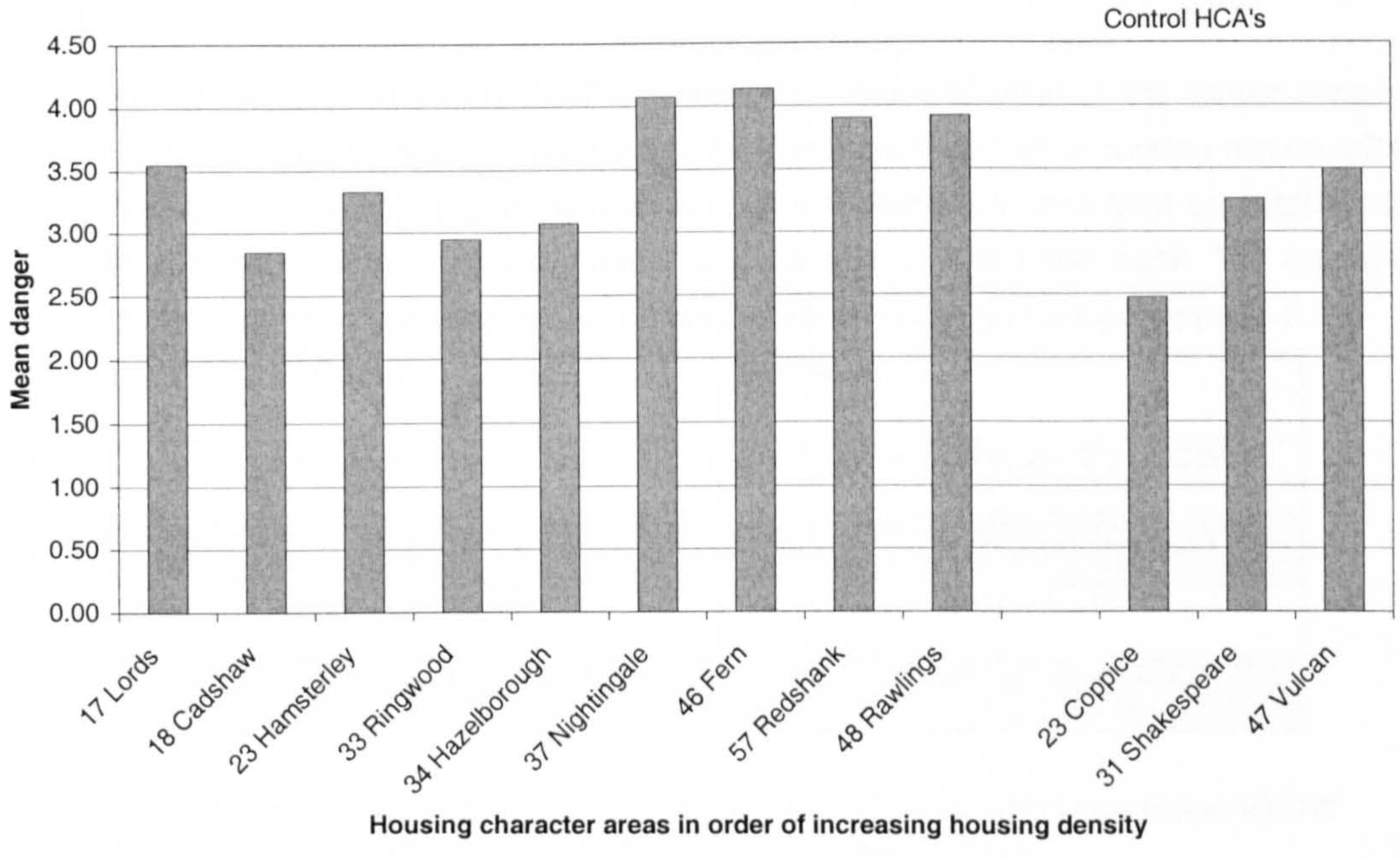

Figure 9.12 Effect of housing density on respondents' evaluation of the danger posed to children in the local area by "drugs and alcohol"

The district in which the respondents' HCA's were situated also had a significant impact on their evaluation of the danger to children from "drugs and alcohol" in the local area. Respondents from Oakwood and Locking Stumps saw "drugs and alcohol" as a greater danger to children than their counterparts from Gorse Covert (tables 9.19 and 9.20).

Drugs/alcohol- danger posed to children in the local area

District	Mean
Gorse Covert	3.13
Locking Stumps	3.59
Oakwood	3.94

Table 9.20 Effect of district on respondents' evaluation of the danger posed to children in the local area by "drugs and alcohol"

Comparison between respondents living in Birchwood and the control group from outside

Whether the respondents lived inside or outside Birchwood had a significant effect on their perception of the danger to children from "drugs and alcohol" in the local area: Mann Whitney z = -2.962; p = 0.003. Whereas the mean danger from "drugs and alcohol" inside Birchwood was 3.59, outside it was 3.06: respondents from inside Birchwood saw "drugs and alcohol" as a greater danger than their counterparts from outside. The trend for respondents from higher housing density HCA's to regard "drugs and alcohol" as a more serious problem was repeated in the control sample from outside Birchwood (figure 9.12).

"Gangs"

Differences between HCA's and districts in Birchwood and the impact of vegetation and housing density

The HCA of the respondents had a significant impact on their evaluation of the danger posed to children in the local area by "gangs" (table 9.21). Respondents from higher housing density HCA's were significantly more likely to regard "gangs" as a greater problem in their local area (table 9.21, figure 9.13). However, the correlation coefficient was low and the trend was weak. The vegetation density of the HCA's had no significant impact on the perception of danger from gangs (table 9.21).

Variable	Test used	Test result
HCA	Kruskal-Wallis	Chi-Square = 21.364; df = 8; p = 0.006.
Vegetation density	Spearmans correlation	r_s = -0.064; n = 201; NS.
Housing density	Spearmans correlation	r_s = -0.174; n = 201; p = 0.014.
District	Kruskal-Wallis	Chi-square = 6.275; df = 2; p = 0.043.

Table 9.21 Effect of HCA, vegetation density, housing density and district on respondents' evaluation of the danger posed to children in the local area by "gangs"

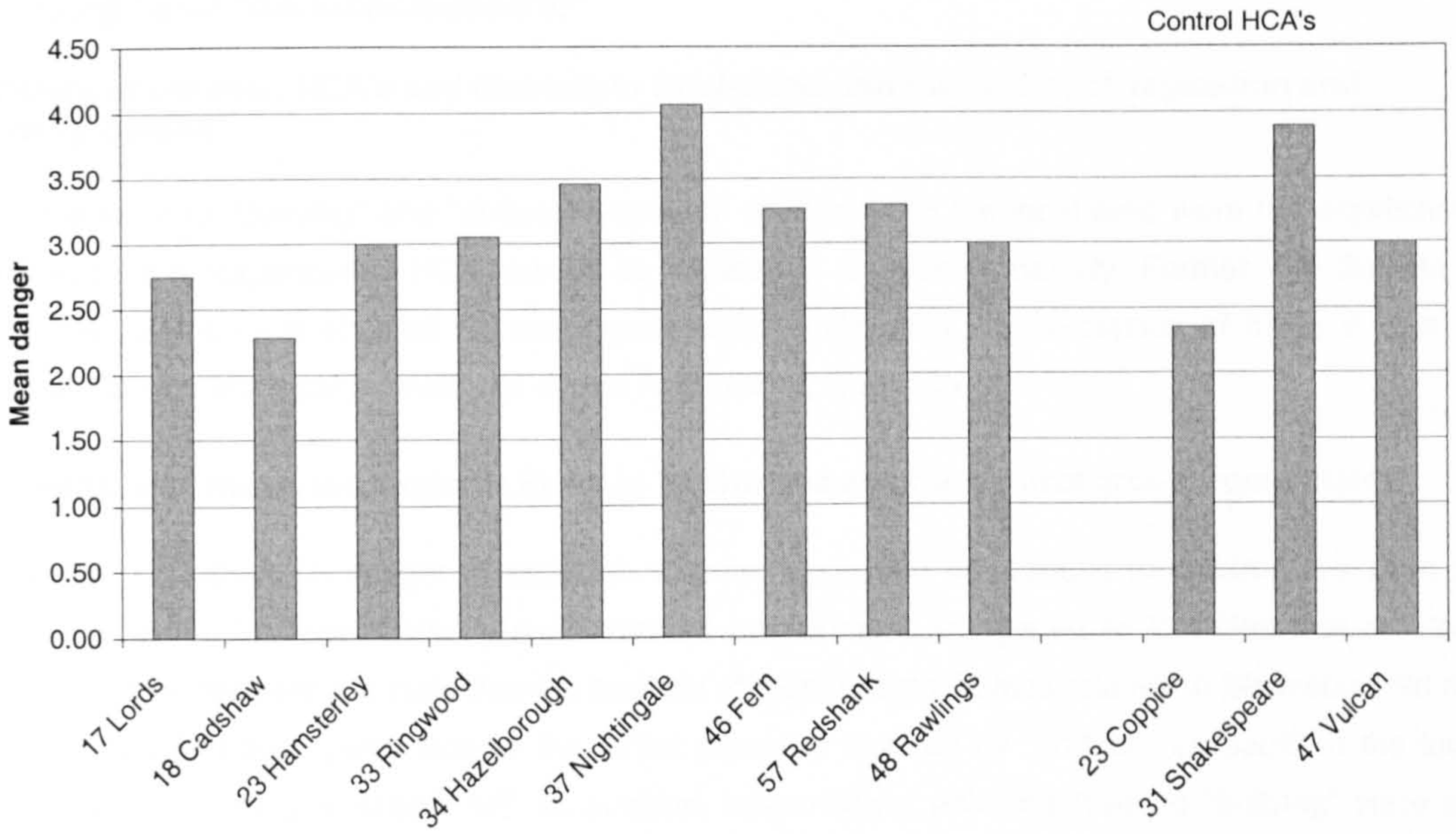

Figure 9.13 Effect of housing density on respondents' evaluation of the danger posed to children in the local area by "gangs"

The district in which the respondents' HCA's were situated also had a significant impact on their evaluation of the danger to children from "gangs" in the local area. Respondents from Oakwood and Gorse Covert saw "drugs and alcohol" as a greater danger to children than their counterparts from Locking Stumps (tables 9.21 and 9.22).

Gangs- danger posed to children in the local area	
District	Mean
Locking Stumps	2.82
Gorse Covert	3.13
Oakwood	3.36

Table 9.22 Effect of district on respondents' evaluation of the danger posed to children in the local area by "gangs"

Comparison between respondents living in Birchwood and the control group from outside

Whether the respondents lived inside or outside Birchwood had no significant effect on their perception of the danger to children from "gangs" in the local area: Mann-Whitney z = -0.025; NS. The trend for respondents from higher housing density HCA's to regard "gangs" as a more serious problem was not repeated in the control sample from outside Birchwood- in this case it was the respondents from the medium housing density HCA, Shakespeare, who were particularly concerned about "gangs".

"Bullying" and "Abduction/assault"

Differences between HCA's and districts in Birchwood and the impact of vegetation and housing density

Attitudes towards "bullying" and "abduction/assault" of children in the local area were not significantly affected by the respondents' HCA, nor by its vegetation or housing density. Further, the districts in which the HCA's were situated did not impact significantly upon the perception of these threats to children (for non significant results see tables A17 and 18, Appendix 8).

Comparison between respondents living in Birchwood and the control group from outside

Given that this research sought to establish whether abduction or assaults to children are seen as more of a threat in Birchwood's heavily wooded environment, compared to localities that are less vegetated, it is interesting to note that the location of respondents' homes relative to Birchwood did not significantly affect their perception of the threat posed to children by "abduction/assault" in the local area: Mann-Whitney z = -0.666; NS. In addition, respondents' attitudes towards "bullying" were not affected by the respondents' home location relative to Birchwood: Mann-Whitney z = -1.632; NS.

Question 25 "All things considered do you feel that your local area is a good place to bring up children?"

Differences between HCA's and districts in Birchwood and the impact of vegetation and housing density

The respondents' opinions as to whether their local area was a good place to bring up children varied significantly according to which HCA they lived in (table 9.23). Respondents from lower housing density HCA's were far more likely to believe that their local area was good for bringing up children, compared to respondents from higher housing density areas (table 9.23 and figure 9.14).

Variable	Day time or after dark	Test used	Test result	Exact significance= E Monte Carlo significance= MC
HCA	Day time	Chi-square	$x^2 = 28.448$; df = 8; p = 0.001.	**MC**
Vegetation density	Day time	Mann-Whitney	z = -1.966; p = 0.049.	
Housing density	Day time	Mann-Whitney	z = -4.196; p < .0001.	
District	Day time	Chi-Square	$x^2 = 24.537$; df = 2; p < .0001.	

Table 9.23 Effect of HCA, vegetation and housing density and district on respondents' view as to whether local area was a good place to bring up children

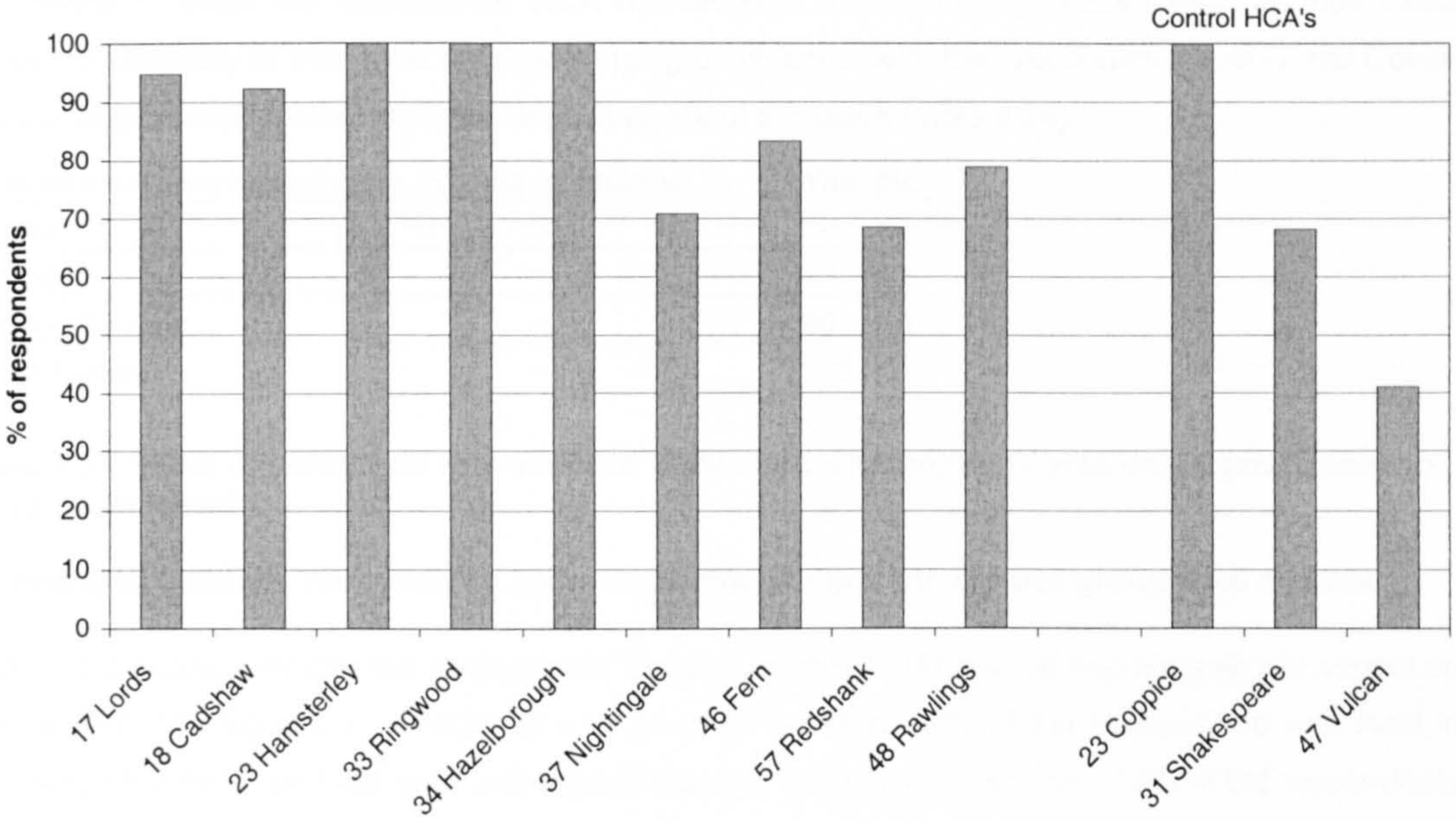

Figure 9.14 Effect of housing density on respondents' view as to whether local area was a good place to bring up children

There was also a statistically significant but weak association between the vegetation density of the HCA's and variations in this factor but there was no obvious trend in the data (table 9.23 and figure 9.15).

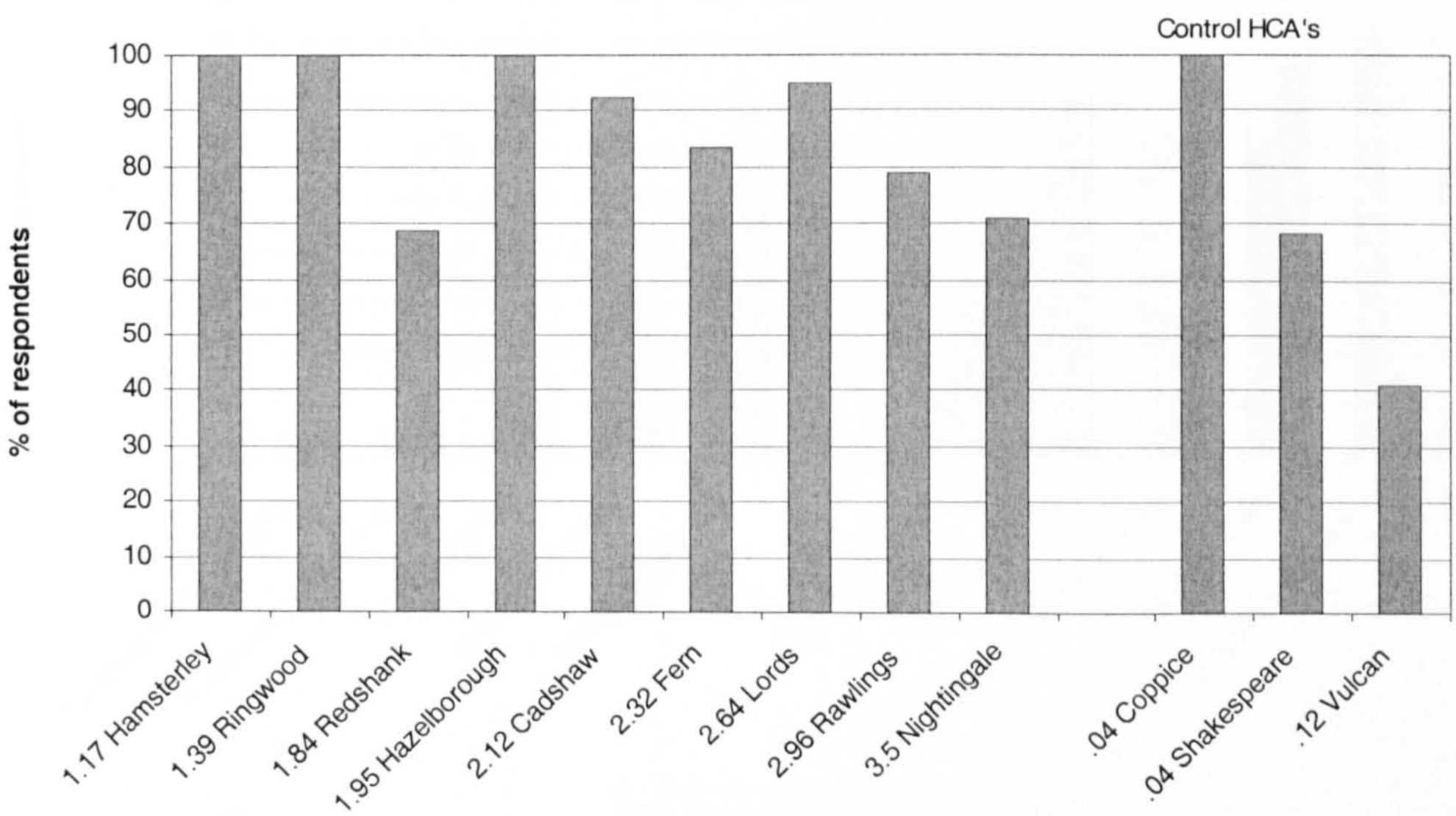

Figure 9.15 Effect of vegetation density on respondents' view as to whether local area was a good place to bring up children

The district in which the respondents' HCA was situated also had a significant impact on their views about the suitability of their local area for bringing up children, with the respondents from Gorse Covert and Locking Stumps feeling much more positive about this issue (table 9.24).

Whether local area a good place to bring up children	Yes	No
District	%	%
Oakwood	73	27
Locking Stumps	90	10
Gorse Covert	100	0

Table 9.24 Effect of district on respondents' view as to whether local area was a good place to bring up children

Comparison between respondents living in Birchwood and the control group from outside

Finally, it is noteworthy that the respondents' location relative to Birchwood had a significant impact on this variable: Chi-Square $x^2 = 6.533$; df = 1; p = 0.011). Whilst 86% of the respondents who lived in Birchwood felt that their local area was a good place to bring up children, only 73% of the respondents from outside Birchwood were positive about this issue.

Question 26 Which aspects of your local area make it a good/bad place to bring up children?

As explained earlier (page 243), the answers to this open question were placed into categories, and the results are shown in figure 9.16. The respondents often gave more than one reason in their answer, and sometimes they gave positive as well as negative reasons.

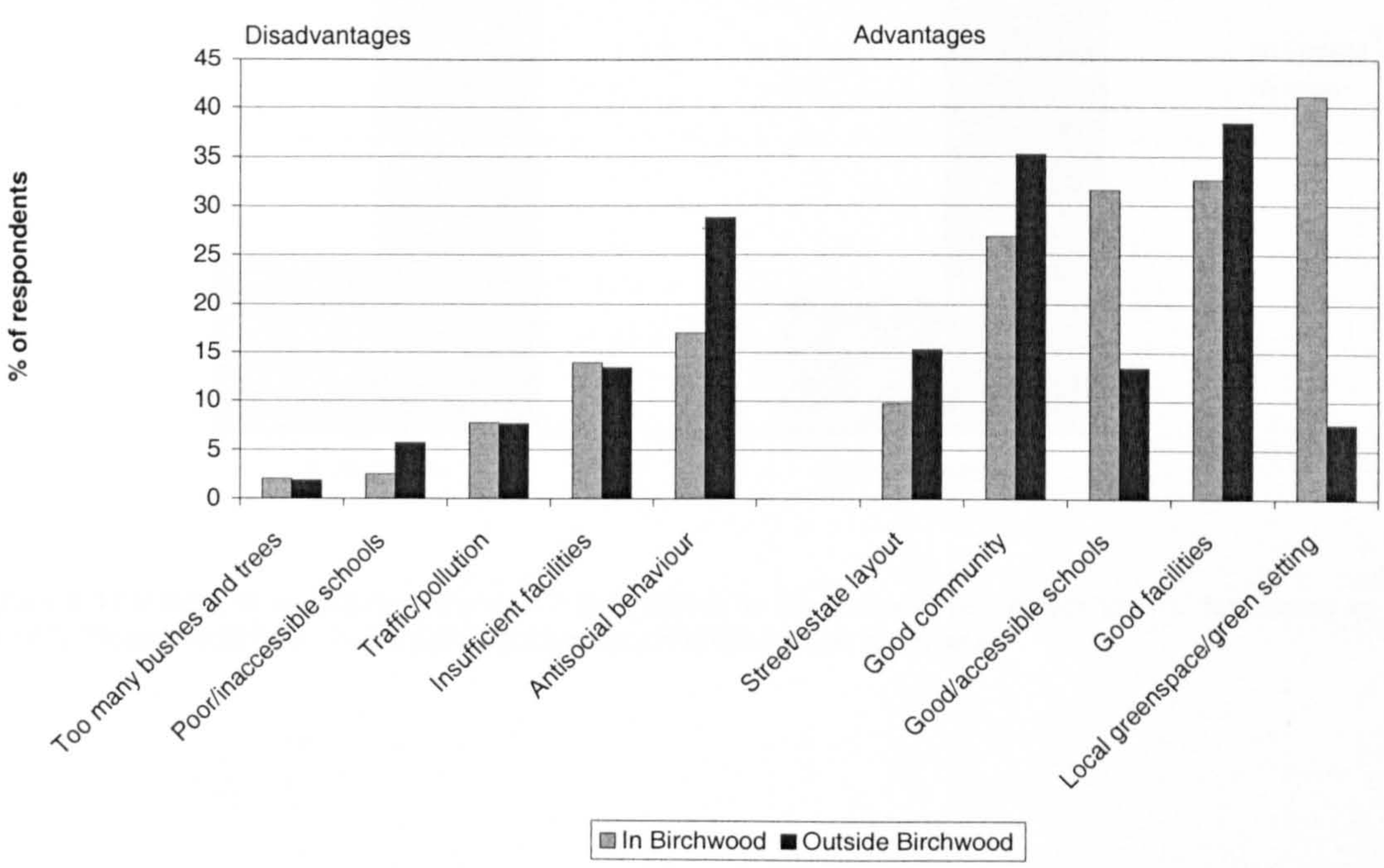

Figure 9.16 Advantages and disadvantages of local area as a place to bring up children

Figure 9.16 shows that the reasons for Birchwood being a good place to bring up children most often cited by the Birchwood respondents who answered this question were reasons associated with its

"local green spaces/green setting", followed by reasons associated with "good facilities", "good/accessible schools" and "good community". This data is explored in more detail in the discussion that follows at the end of this chapter.

The impact of demographic factors

Gender

Surprisingly, the gender of the respondents had no bearing on any of the dependent variables related to children referred to in this chapter, with one exception (for non significant results see table A19, Appendix 8). Male respondents were significantly more likely to feel that " local facilities" (for example, shops and pubs) constituted unsafe places for children in the local area (Chi-square $x^2 = 8.762$; df = 1; p = 0.003). Amongst the sample of respondents from Birchwood 22% of the male respondents held this view, as opposed to only 6% of the female respondents. This pattern was duplicated within the control sample from outside Birchwood, although in this case the difference was less pronounced (figure 9.17).

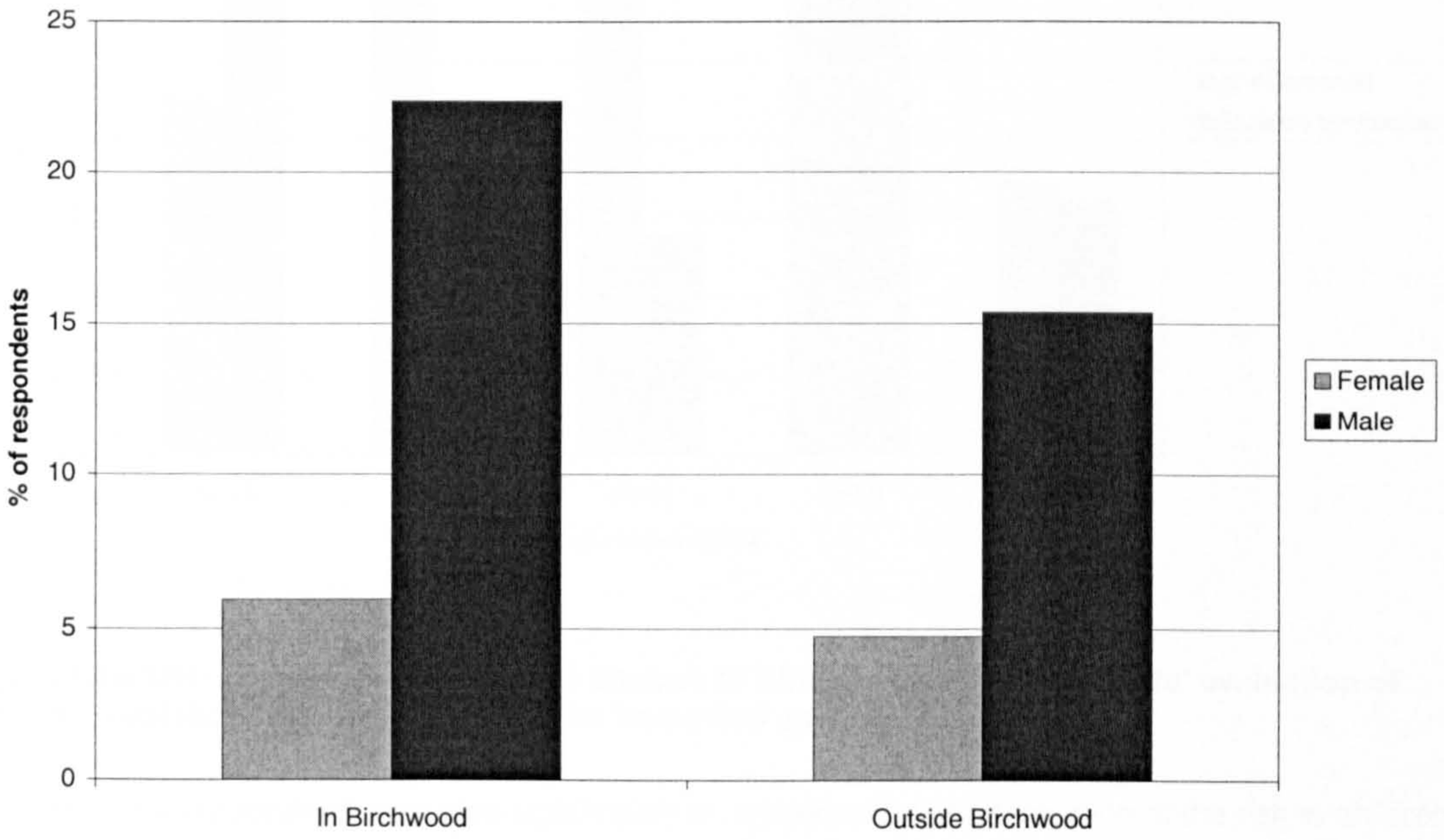

Figure 9.17 Effect of gender and location in relation to Birchwood on respondents' tendency to identify "local facilities" as unsafe places for children in the local area

Age

Again, the age of the respondents had no impact on the dependent variables referred to in this chapter, with two exceptions (for non significant results see table A20, Appendix 8). The age of the respondents was significantly correlated with their evaluation of children's safety in the respondents' own homes and gardens: Spearman's Correlation $r_s = -0.136$; $n = 240$; $p = 0.036$. The correlation coefficient was very low but figure 9.18 shows that there was a slight trend for older respondents (over 59) to feel less optimistic about children's safety in this environment. This trend was not repeated amongst the control sample from outside Birchwood (figure 9.18).

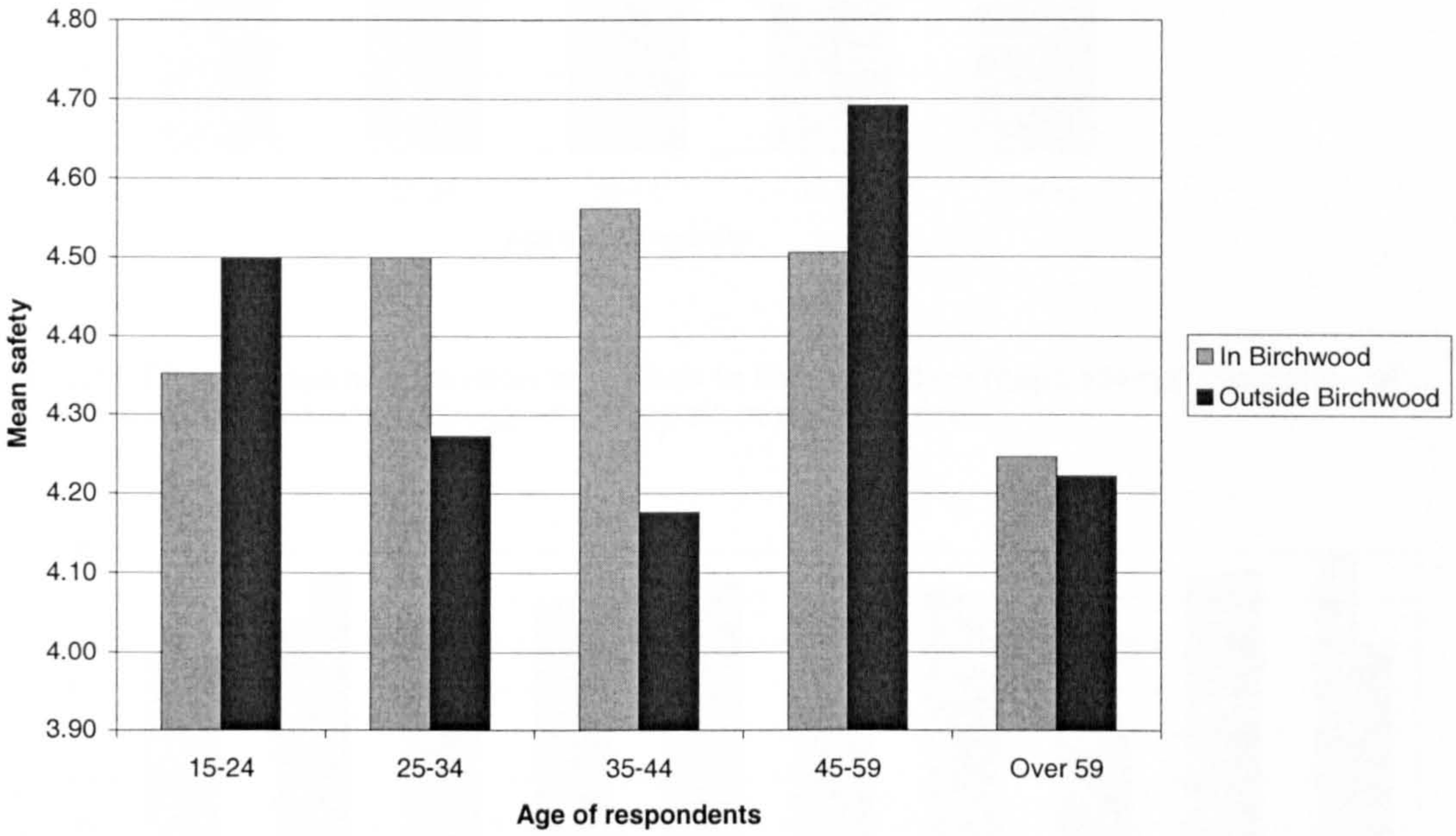

Figure 9.18 Effect of age and location in relation to Birchwood on respondents' evaluation of children's safety in the respondents' own home and garden

The age of the respondents was also significantly correlated with their evaluation of the risk to children posed by "drugs and alcohol" in the local area: Spearman's Correlation $r_s = -0.166$; $n = 200$; $p = 0.019$. Once again, the correlation coefficient was rather low, but figure 9.19 shows that there was a trend for older respondents to feel that "drugs and alcohol" posed a more serious threat to children in the local area. This pattern was duplicated weakly within the control sample from outside Birchwood. The data for 15-24 year-olds from the control sample can be disregarded, as there were only two respondents in this age category.

Occupation

Again, the occupation of the respondents had very little impact on the dependent variables referred to in this chapter, with two exceptions (for non significant results see table A21, Appendix 8).

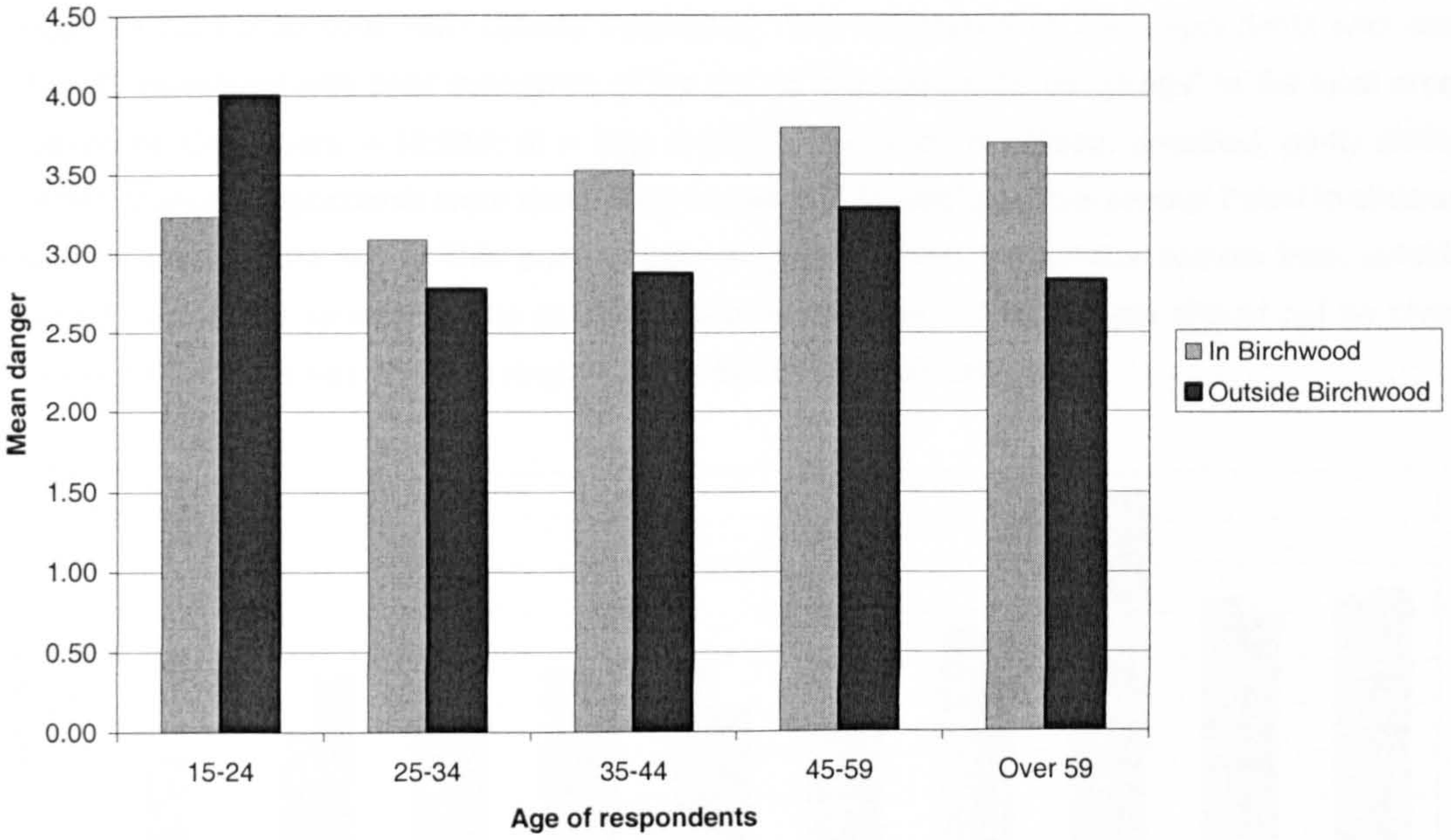

Figure 9.19 Effect of age and location in relation to Birchwood on respondents' evaluation of the risk to children posed by "drugs and alcohol" in the local area

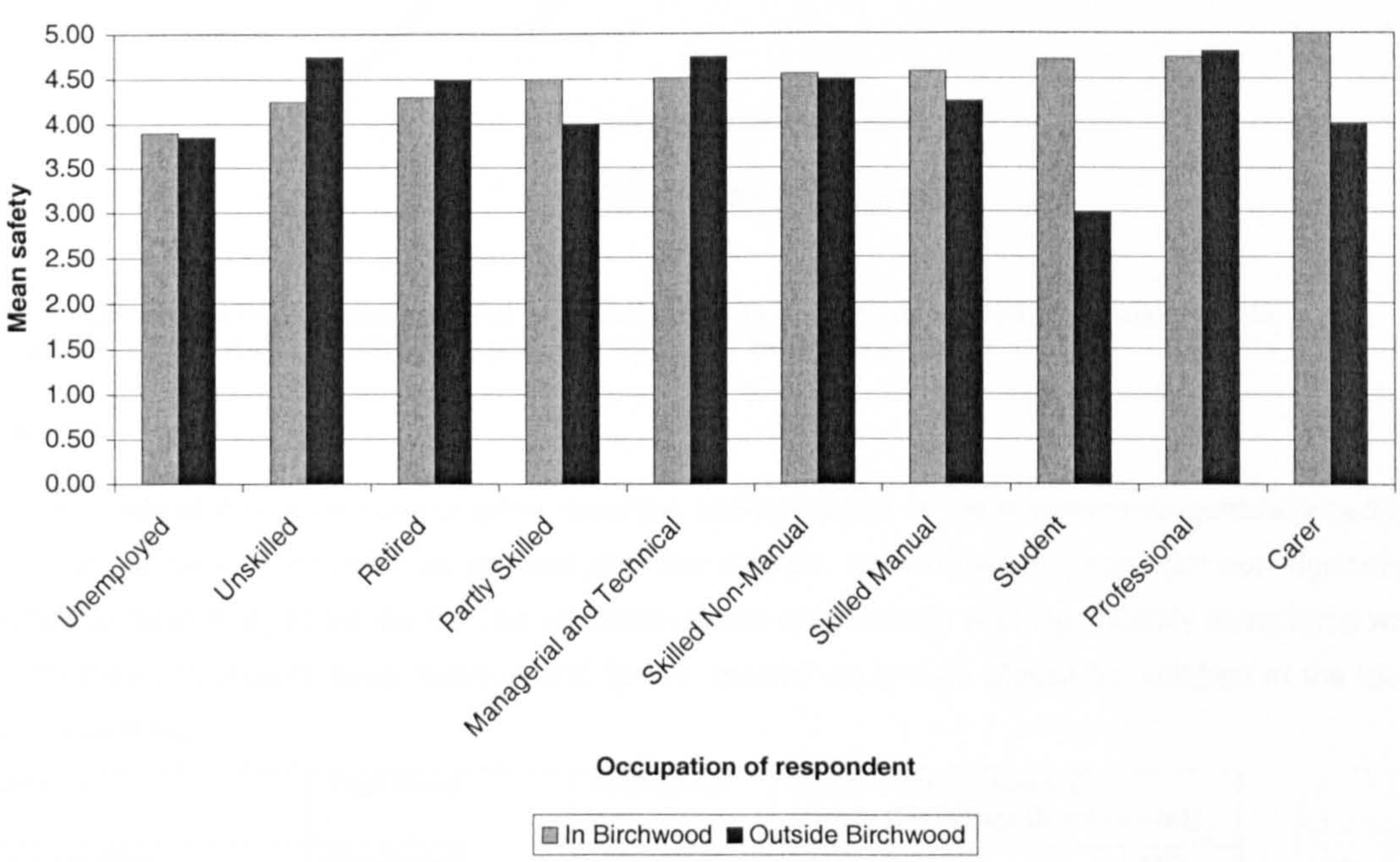

Figure 9.20 Effect of occupation and location in relation to Birchwood on respondents' evaluation of children's safety in the respondents' own home and garden

The occupation of the respondents was significantly associated with their evaluation of children's safety in the respondents' own homes and gardens: Kruskal-Wallis Chi-square = 21.176; df = 9; p = 0.012. Unemployed, unskilled and retired respondents were more likely to feel less optimistic about

children's safety in the respondents' home environment (figure 9.20). This trend was not repeated amongst the control sample from outside Birchwood. The occupation of the respondents was also significantly correlated with their evaluation of the risk to children posed by "gangs" in the local area: Kruskal-Wallis Chi-square = 19.243; df = 9; p = 0.023. Unemployed, retired, unskilled, partly skilled and skilled manual respondents were more likely to feel that "gangs" posed a serious threat to children in the local area (figure 9.21). This pattern was duplicated within the control sample from outside Birchwood, with some variations. The data for students from the control sample should not be given undue weight, as there was only one respondent in this occupation category.

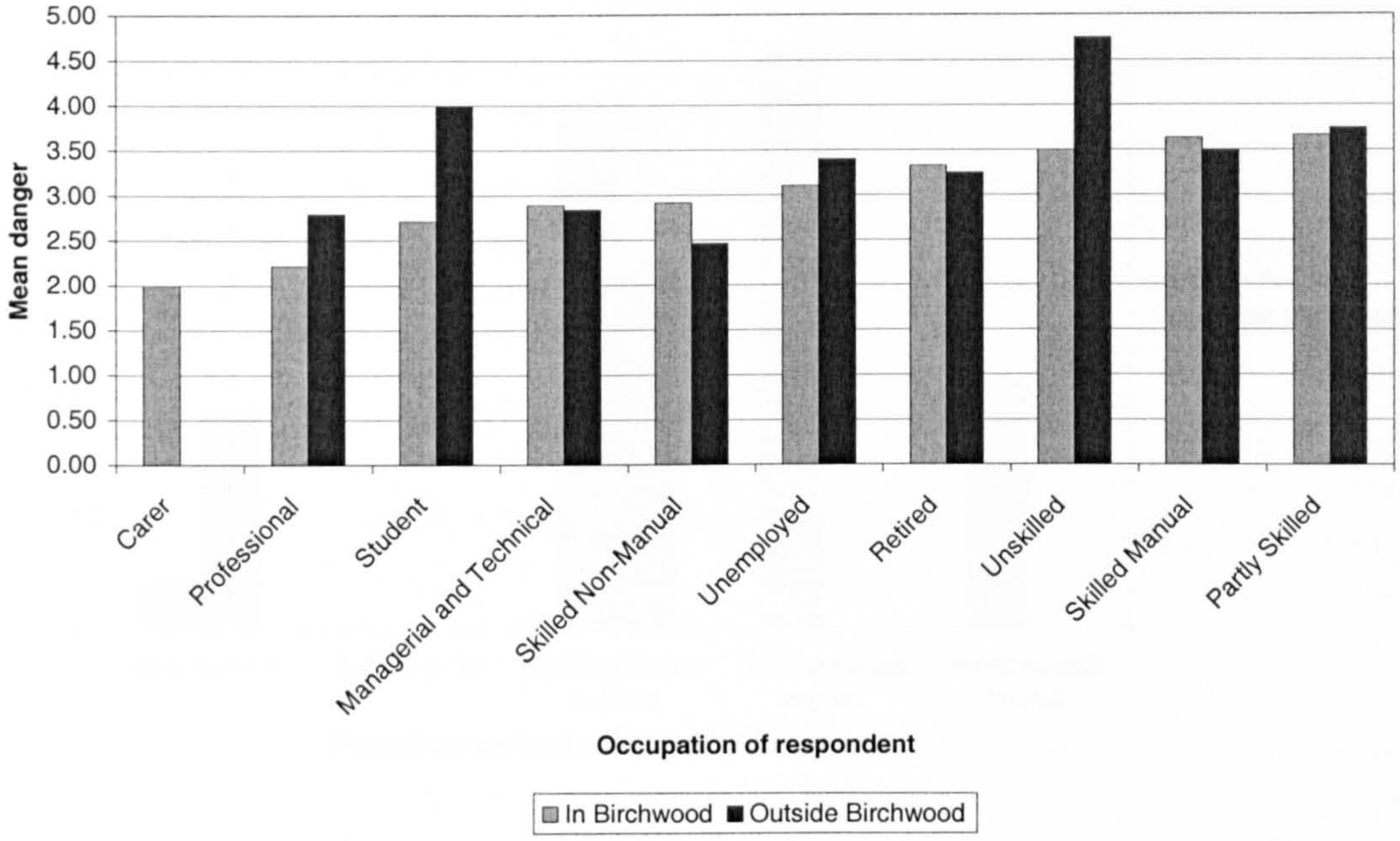

Figure 9.21 Effect of occupation and location in relation to Birchwood on respondents' evaluation of the risk to children posed by "gangs" in the local area

Education

As in the case of the other demographic variables, the education of the respondents generally had no impact on the dependent variables referred to in this chapter, with some exceptions (for non significant results see table A22, Appendix 8). The education of the respondents was significantly associated with their tendency to regard "local facilities and "green spaces" as unsafe places for children in the local area (table 9.25).

Variable	Test used	Test result	Exact significance= E Monte Carlo significance= MC
Local facilities	Chi-square	x^2 = 13.021; df = 4; p = 0.013.	MC
Green spaces	Chi-square	x^2 = 12.011; df = 4; p = 0.014.	MC

Table 9.25 Effect of education and location in relation to Birchwood on respondents' tendency to identify "local facilities" and "green spaces" as unsafe places for children in the local area

In Birchwood, respondents with higher education in the form of undergraduate degrees and postgraduate courses were significantly more likely to feel that "local facilities" were unsafe places for children in the local area, compared to respondents without these forms of education (figure 9.22). Curiously, in the control group from outside Birchwood the position was different. In the control group a greater proportion of respondents who had left school at 16 felt that "local facilities" were unsafe environments for children, but there were no respondents from the higher education categories who shared this view (figure 9.22).

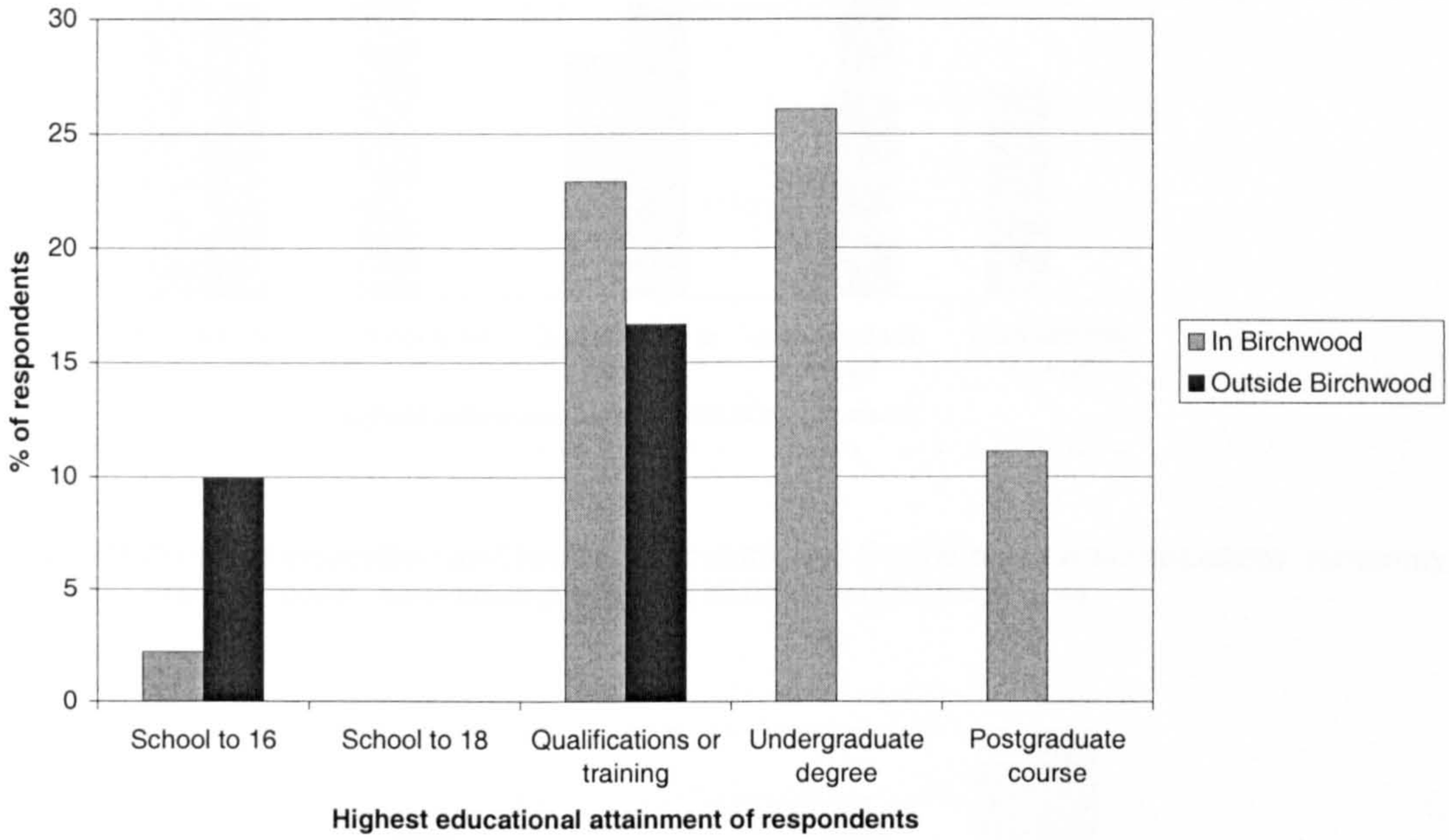

Figure 9.22 Effect of education and location in relation to Birchwood on respondents' tendency to identify "local facilities" as unsafe places for children in the local area

In Birchwood, respondents without any form of higher education were more likely to feel that local "green spaces" were unsafe for children (figure 9.23). Within the control group outside Birchwood the position was virtually the opposite: in this case it was the respondents with higher education who believed that local "green spaces" were unsafe (figure 9.23).

The education of the respondents was also significantly associated with their tendency to believe that "traffic accident" was a significant danger to children in the local area: Kruskal-Wallis Chi-square = 15.385; df = 4; p = 0.004. Respondents with higher education were significantly more likely to regard "traffic accident" as a more serious problem than respondents who had left school without any further education or training (figure 9.24). This pattern was repeated in the control group of respondents from outside Birchwood.

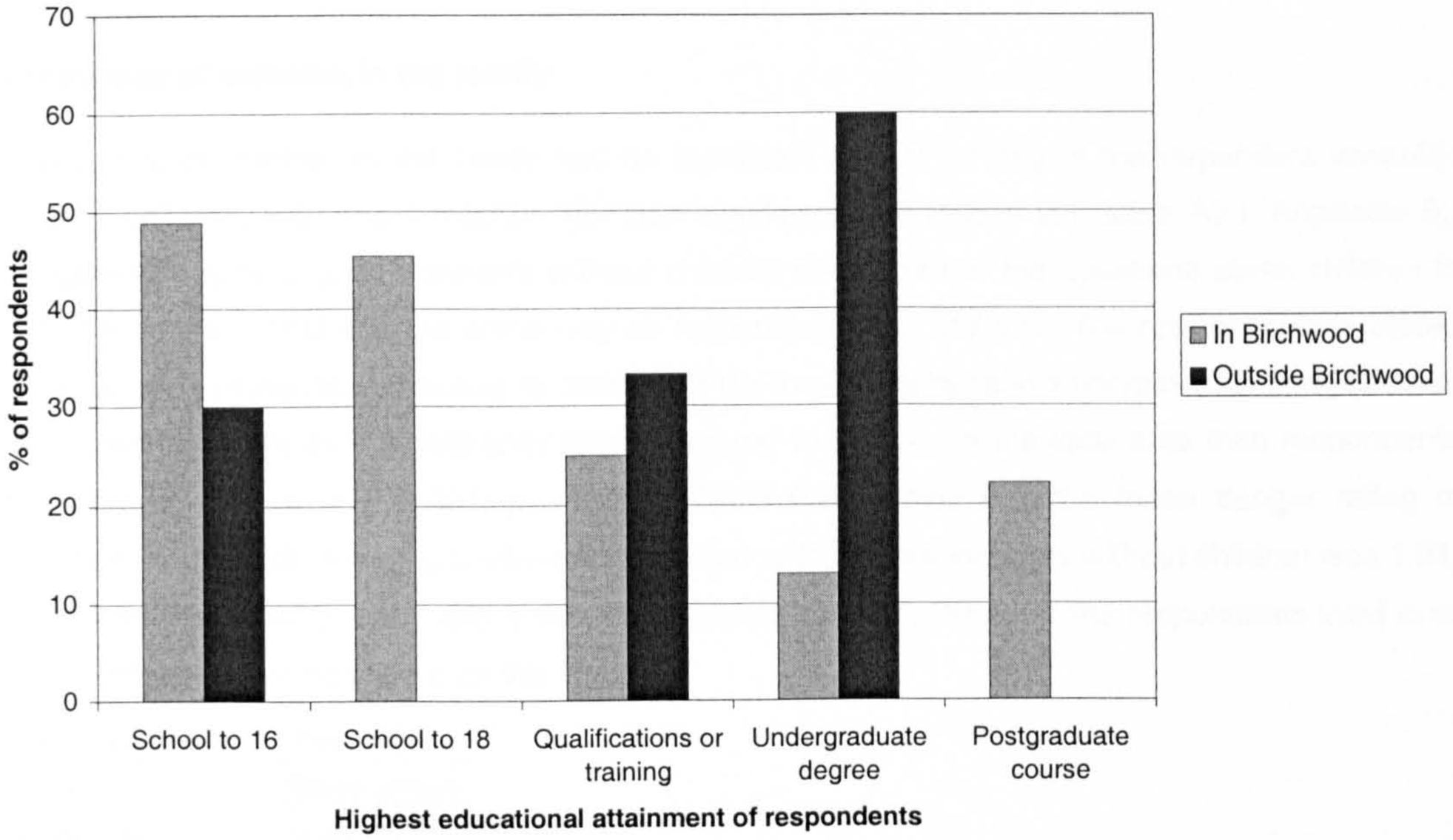

Figure 9.23 Effect of education and location in relation to Birchwood on respondents' tendency to identify "green spaces" as unsafe places for children in the local area

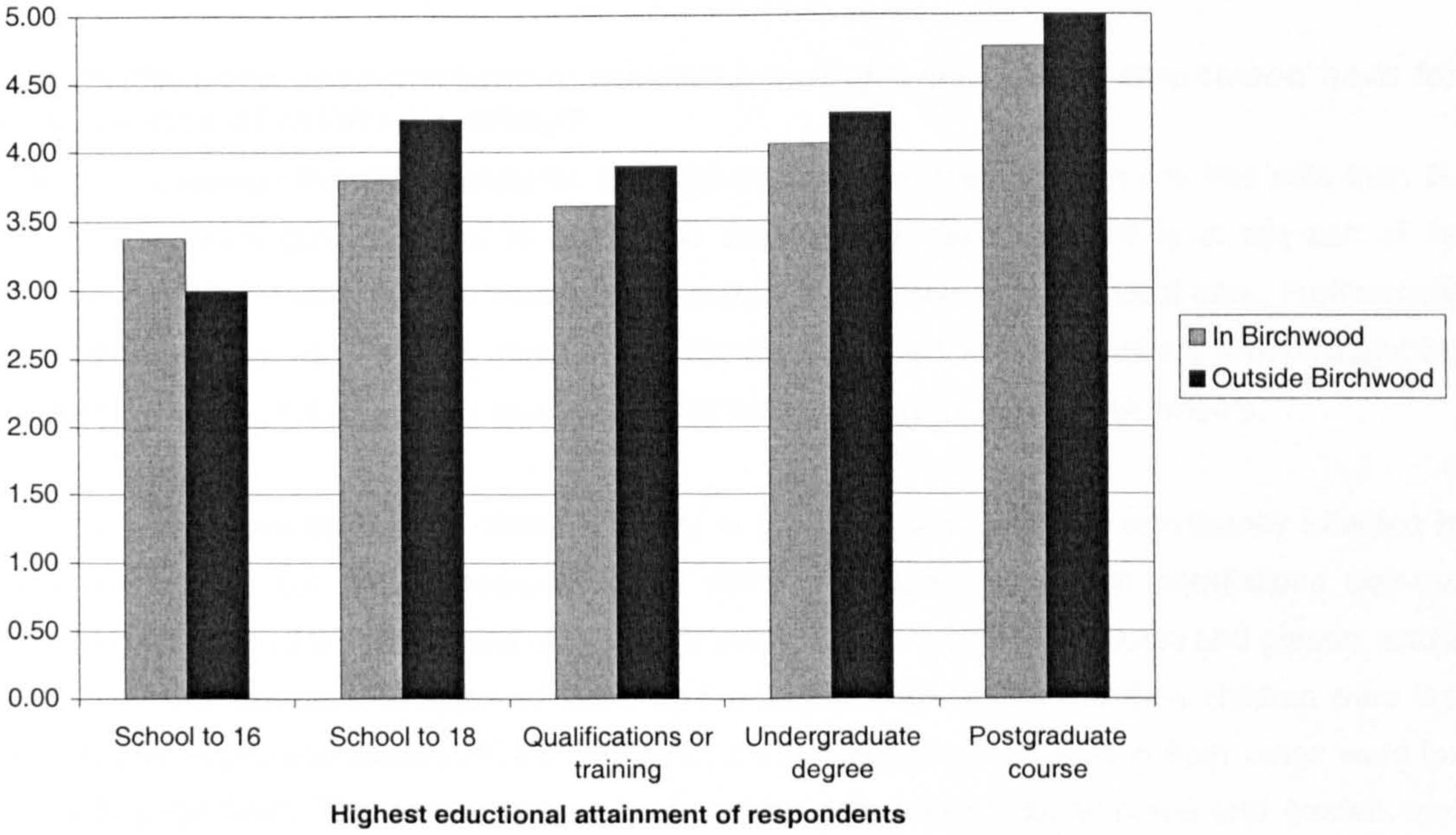

Figure 9.24 Effect of education and location in relation to Birchwood on respondents' tendency to regard "traffic accident" as a danger to children in the local area

The presence of children in the family

The existence of children in the family had no significant impact on any of the dependent variables relating to children, with one exception (for non significant test results see table A23, Appendix 8). Thus, generally speaking, respondents without children responded to the questions about children in Part 5 of the questionnaire in the same way as respondents with children. The only exception related to the evaluation of the danger posed to children in the local area by "abduction/assault". Respondents with children rated this as a significantly greater danger to children in the local area than respondents without: Mann Whitney z = 2.321: p = 0.020. Table 9.26 shows that the mean danger rating of respondents with children was 2.4, whereas the mean rating of respondents without children was 1.91, where 1 was the "least danger" and 5 was the "greatest danger". Whether the respondents lived in or outside Birchwood had no impact on this issue.

Any children under 18	Yes	No
Location	Mean	Mean
In Birchwood	2.40	1.91
Outside Birchwood	2.58	1.93

Table 9.26 Effect of the existence of children in the family and location in relation to Birchwood on respondents' evaluation of "abduction/assault" as a danger to children in the local area

Discussion

What implications does the heavily wooded housing landscape of Birchwood have for the perception of children's safety?

There is no evidence that the inhabitants of Birchwood feel that their children are less safe than the inhabitants of Warrington at large, in any of the three environments referred to in this part of the questionnaire: the inhabitants' own homes and gardens, their street or in the local area. Furthermore, as the following discussion shows, close scrutiny of the data does not demonstrate a meaningful link between vegetation density and the perception of children's safety in these environments.

The respondents' perception of children's safety in the local area was not significantly affected by vegetation density, but there appeared to be some statistically significant correlations between vegetation density and the perception of children's safety in the respondents' home and garden, and in the street. These reflected an apparent trend for the respondents to feel that their children were less safe in higher vegetation density HCA's. However, the correlation coefficients in both cases were low (table 9.3, page 244). The results for children's safety in the respondents' home and garden were rather flat, all mean ratings fell between 4 ("safe") and 5 ("very safe"), and once Hamsterley and Nightingale were removed from the picture, the trend disappeared. As previously indicated the results from Nightingale are unlikely to be representative given that 67% of the respondents from this HCA were aged over 59, and as we have already seen in Chapter 8, "Safety", the adult safety ratings for Nightingale are amongst the lowest overall.

Likewise, the apparent trend in the case of children's safety in the street has already shown to be somewhat unreliable. The lower mean safety ratings of Redshank, Fern and Rawlings can be explained by the competing trend for the ratings to fall in line with increases in housing density (figures 9.1 and 9.2, page 245). The results from Nightingale, as we have already seen, are unlikely to be representative. Lords is the only remaining HCA with a mean safety rating under 4, and as this chapter goes on to describe, the respondents from Lords have particular concerns regarding children's safety on "roads and motorways", and the danger to children from "traffic accident".

It seems that "green spaces" in the local area were most commonly thought of as unsafe places for children (figure 9.4, page 248), regardless of vegetation density. However, Birchwood residents are no more likely to view such places as unsafe than the residents from the rest of Warrington. Thirty two per cent of both samples viewed these places as unsafe.

There were surprising variations in opinions about "green spaces" between the HCA's and districts in Birchwood. Fifty per cent or more (compared to the mean for the whole sample of 32%) of the respondents who expressed an opinion from all three HCA's in Gorse Covert (Hamsterley, Hazelborough and Ringwood) thought that "green spaces" were unsafe for children, and 67% of the respondents who expressed an opinion from Rawlings (a high housing density HCA from Oakwood) also held this view (figure 9.5, page 249). Interestingly, in Coppice, the low housing density control area from outside Birchwood, over 50% of the respondents who expressed an opinion also felt that local "green spaces " were unsafe. The "green space" most frequently identified by respondents from Gorse Covert in this context was Birchwood Forest Park. Twenty eight per cent of the respondents from Rawlings chose "woodland" and 22% chose Birchwood Forest Park. Fifty five per cent of the respondents from Coppice chose "woodland".

The nature of the threat to children in "green spaces" was discussed during the interviews. In one of the preliminary interviews a mother from Gorse Covert described an incident that had taken place in Birchwood Forest Park involving her son, when he had been assaulted and injured by other youths. Chapter 8, "Safety" (page 227) explores the fears of three respondents from Gorse Covert for children in the park. Essentially these respondents feared that children would encounter a potential aggressor in the park and one of them felt that such an aggressor would be likely to come from Oakwood. Respondents from Oakwood and Locking Stumps were less specific about the origins of the aggressor:

> **Mr Cw**: "yes see the thing is with the park as well if you have a place to go to, like they they've got the new park there for children...that was a very good idea, but the thing is you see most of those 2 young girls being murdered obviously...course that's you know in our thoughts you know very much these last few days...[inaudible] it's it's another added fear that you know...for children yeah, that's what I fear for, not for myself by the way I fear it for the local children."

> **Mr. B**: "Well the amount of nature's in Risley Moss, for the kids round here... these facilities are there on the doorstep and because of dirty old men hiding in bushes and all the rest of it, the kids don't avail themselves of it."

> **Mr Cr**: "you got the Moss, the Risley Moss that that's great...no that there's thousands go here isn't there?

Mrs Cr: "Yeah."

Mr Cr: "But I think that"

Mrs Cr: "I don't think it could or your like children go into woodland now...it's not safe...and it's only I mean people have been accosted going round the park at Birchwood...which has made everybody nervous whether you live right near it or not"

This suggests that what most adults fear for children in Birchwood's green spaces is some kind of bullying or intimidation, or a physical or sexual assault.

After "green spaces" Birchwood residents were most likely to identify "pathways, bridges and underpasses" as unsafe places for children in the local area. Twenty five per cent of Birchwood respondents held this view, compared to only 12% of the control group from outside. This is hardly surprising given that anecdotal evidence indicates that paths surrounded by woody vegetation are widely regarded as unsafe by the public at large, and there are many such paths throughout Birchwood. However, the difference in proportion between Birchwood and non-Birchwood residents was not statistically significant and the tendency to identify "pathways, bridges and underpasses" as unsafe was not significantly associated with the vegetation density of the respondents' HCA's. Further, not all the respondents from Birchwood believed that these places were unsafe: there were surprising differences between districts within Birchwood. Only respondents from Oakwood and particularly Locking Stumps thought "pathways, bridges and underpasses" were unsafe, but none from Gorse Covert did. Although Oakwood and Locking Stumps are the only districts that contain high housing density HCA's the tendency to view paths as unsafe was not restricted to residents of high housing density HCA's. Thirty five per cent of the residents of Lords and 50% of the residents of Cadshaw (both low housing density HCA's in Locking Stumps) thought these places were unsafe. This suggests strongly that the crucial differences must lie in the nature of the paths themselves, or in incidents that have taken place in particular locations. Chapter 8, "Safety" (page 228) describes how the utilitarian and recreational path systems are separated in Gorse Covert; and how the perception of the pathways in Locking Stumps has been tainted by the crimes that have occurred there.

Where fears about children were expressed in relation to the pathways during the interviews these were of a similar nature to the fears about "green spaces". Here a respondent from Rawlings explains her worries about children using the wooded pathways:

AJ: "OK, and you may have answered this already but what do you think the advantages and disadvantages of the woodland are?"

...

Mrs G: "the disadvantage [sic] of it is every walkway leads to somewhere here like you go the end there you can walk down through to the shops and everything."

AJ: "And that's a good thing?"

Mrs G: "It is very good, you can walk down there the same way, go through all the woodlands and everything."

Mr G (Mrs G's son): "But it's not very well lit."

Mrs G: "But it's not lit so to me it's a haven for abuse on the kiddies or anything it's said you know like Jessica and Holly and things like that it's said, it is an haven for that definitely."

Where the Birchwood and control samples really differed was in their views about "built-up areas". These were whole districts that respondents identified as being unsafe such as Oakwood, Birchwood, Blackbrook or Longford. Members of the control sample were significantly more likely to identify such areas as being unsafe for children than respondents from Birchwood. Twenty six per cent of the respondents from the control sample outside Birchwood who expressed a view thought such places were unsafe, compared to a mere 6% of the Birchwood respondents. Within Birchwood, respondents from low vegetation density HCA's were significantly more likely to identify "built-up areas" as unsafe places for children but the trend was weak. Out of the three districts in Birchwood, respondents in Gorse Covert (from low or medium vegetation density HCA's) were significantly more likely to pick "built-up areas".

Neither the vegetation density of the HCA's nor the respondents' location relative to Birchwood was significantly associated with either of the other two categories of unsafe places for children in the local area, namely "local facilities" and "roads and motorways", though respondents from low housing density HCA's were significantly more likely to identify the latter as unsafe.

There is a broad consensus between the residents of Birchwood and the residents of Warrington at large as to the nature of the dangers to children in the local areas around housing. "Traffic accident" is thought to be the greatest danger and "abduction/assault" the least danger. The ratings for "gangs", bullying" and "abduction/assault" were more or less the same for each group of respondents (inside/outside Birchwood). The only significant difference between the two groups was in the perception of the danger posed by "drugs/alcohol" with Birchwood respondents seeing this as a greater danger than their counterparts from outside.

The question arises as to whether the perceived danger from "drugs/alcohol" in Birchwood is related in any way to its woodland setting. Respondents from high vegetation density HCA's in Birchwood were significantly more likely to believe that "drugs/alcohol" were a greater danger to children in the local area but, once again, the trend was slight (figure 9.11, page 257). All but one of the high or medium vegetation density HCA's that have high ratings for "drugs/alcohol" are also high housing density HCA's, and the trend for high housing density HCA's to have high ratings for this factor was stronger (figure 9.12, page 257). The only exception to this is Lords, a high vegetation and low housing density HCA from Locking Stumps. Thus there is no evidence linking the perception of increased danger from "drugs/alcohol" to the higher levels of vegetation in Birchwood.

Given that "green spaces" were the places that were most commonly thought of as unsafe for children, and given the nature of the fears expressed about these places during the interviews, one would have expected "abduction/assault" to be regarded as the greatest danger to children in the local area, but it was actually regarded as the least danger across the whole sample. This suggests that "green spaces" have a substantial reputation or mythology attached to them: they were perceived as the places where children are most vulnerable, but when the respondents were asked to identify the greatest danger to children in their local area they picked "traffic accident", a danger that is clearly incompatible with green spaces. Perhaps this apparent discrepancy has something to do with the

nature of the threat. Although "abduction/assault" is thought of as less likely, it is more terrifying, and the fact that "green spaces" are seen as the ideal environment for it to happen makes these places seem the most unsafe by association.

What is the impact of housing density on the perception of children's safety?

As with the adult respondents' perception of their own safety, housing density had a bigger impact on the perception of children's safety than vegetation density. In particular, respondents from higher housing density HCA's gave children significantly lower safety ratings in their own street, compared to respondents from lower housing density HCA's.

The underlying reasons for this are likely to be the same as for the adults' evaluation of their safety, namely the perception that crime has occurred in the locality (see Chapter 8, "Safety", page 232). It may also be that the deprivation that has been shown to be associated with these areas (see Chapter 6, "Aesthetic Factors", page 155) plays a part in undermining feelings of personal security, for example by affecting the adults' perception of their own ability to protect children from harm.

Housing density did not affect the respondents' choice of places that were unsafe for children in the local area, except in the case of "roads and motorways". Respondents from lower housing density HCA's were more likely to choose "roads and motorways" and, as we have already seen (Chapter 6, "Aesthetic Factors", page 153), respondents from Locking Stumps felt particularly strongly about this issue as this is the only district containing a through road, as well as being closest to the business parks in Birchwood that attract heavy flows of traffic.

Housing density was also significantly associated with the adult respondents' perception of the dangers facing children in the local area. Predictably enough, as well as believing that "roads and motorways" were unsafe places for children, respondents from lower housing density HCA's were also more likely to feel that "traffic accident" was the greatest danger to children in the local area.

On the other hand, respondents from higher housing density HCA's were more likely to believe that "drugs and alcohol" and "gangs" were the greatest dangers to children in the local area. This seems to confirm the link between the perception of children's safety and the occurrence of crime, referred to above.

Finally, housing density also impacted on whether respondents thought their local area was a good place to bring up children. Respondents from lower housing density HCA's were far more likely to feel that their local area was a good place to bring up children. All of the respondents from Gorse Covert (the district containing only low and medium housing density HCA's) who answered this question thought that their local area was a good place to bring up children. When asked to give reasons for their belief 54% gave a reason that related to the quality of the community in Gorse Covert, compared to only 18% or respondents from Locking Stumps, and 17% from Oakwood.

Broadly speaking, all of these trends were duplicated in the control HCA's outside Birchwood, except in the case of "roads and motorways", where the trend was reversed. In this case, it was the respondents from the high housing density HCA who were most likely to identify these places as unsafe.

How is Birchwood seen by its inhabitants as a place to bring up children?

A significantly greater proportion of respondents from Birchwood thought that their local area was a good place to bring up children, compared to the control group from outside Birchwood (86% as opposed to 73%). The reasons most often cited by Birchwood respondents to support this view fell into the category of "local green space/green setting". Forty one per cent of the Birchwood respondents who answered the question gave reasons that fell into this category, compared to only 8% of respondents from the control group outside. Only 2% of respondents from Birchwood felt that "too many bushes and trees" detracted from the quality of the local area as a place for child rearing, and interestingly, exactly the same proportion of respondents from the HCA's outside Birchwood held this view, despite the fact that there were far fewer trees and bushes in these localities.

During the interviews the value of Birchwood's green environment for children was explored in more detail. Two main types of benefit were identified:

- Contact with the natural world; and
- The possibilities for adventurous play.

Contact with the natural world.

During the interviews many respondents articulated a belief that it was important for children to have contact with nature and to learn about it:

> **AJ**: "Right OK can you think of sort of advantages of the woodland?"
>
> **Mrs T**: "I mean it's nice to go to Risley Moss and I think it's nice for the youngsters to go for I think they can learn a lot you know I think that that is a good thing".
>
> **AJ**: "What does having Risley Moss in the locality mean to you?"
>
> **Mrs F**: "Well there's a lot of nature going on there you know and the children learn a lot from that you know that rangers are there and"
>
> **AJ**: "you go there with your group sometimes?"
>
> **Mrs F**: "Yes we do and we see the you know how it changes through the seasons with the you know frogs and fish and little things that they have and trees and there's a bird, they can go up in this bird".

Two respondents articulated the reasons for this in more detail:

> **AJ**: "Right what benefits do you think children and young people get from living in Birchwood?
>
> ...
>
> **Mr M**: "Children experience things growing and they experience [inaudible] I would say they experience life to me [inaudible] I'm a landscape sort of person landscape is extremely important to me, I find it beautiful and I think it helps to give children an appreciation for nature must do
>
> **AJ**: "why do you think that's important that they could have an appreciation for nature?"

Mr M: "Right because nature sustains us really nature has a calming effect on people and also it's sort of exciting as well it's it holds interest."

Mr S: "it's good as well with the Risley Moss and the reserve there because they can actually go down there and actually learn about I mean I never had that when I was young, I didn't have anywhere where I could go and learn about the environment that I was playing in you know what the trees were, what the, now you mightn't have any interest in that but, my eldest boy and that they just take an interest in their environment you know."

AJ: "Do you think it's important for them?"

Mr S: "Yes I do I think you know being aware of your surroundings I mean what's left of our surroundings basically and even if it is man-made I mean this used to be a ministry of work site prior to have being developed so it's quite good that it's sort of been taken back to a deciduous woodland which is probably what it was originally at some stage of history yeah so and so therefore you get you get all that kind of history at the you know at the park yeah."

AJ: "I'm just interested in why, why you think it's important that they should be aware of their surroundings, I know you've already given one reason but I wonder if you went, if you just sort of looked a little deeper than that if you could think of any other reason for?"

Mr S: "Well it's the habitat isn't it, I mean you know basically they lived in suburbia it's not a city built up area you know and they once you get the greenery and the woodland it attracts animals and such things, you know they've got to learn that you've got to co-habit and live in existence with everything that's around you know yeah".

There are two themes being expressed in these two explanations. The first is a belief that humans and nature are interdependent ("nature sustains us", "you've got to co-habit and live in existence with everything that's around you") and that it is therefore important for children to learn about the nature of this relationship. What is almost being articulated is that this co-existence is necessary in order to secure the future of nature and the human race ("being aware of your surroundings I mean what's left of our surroundings"). This idea is very closely connected to the ideas about the conservation of nature and wildlife and human coexistence with nature that were explored earlier in Chapter 7,"Place Identity" (page 186). The second theme also picks up on the ideas about relaxation, tranquillity and stress relief expressed in that chapter (page 189). The words of the first speaker are fascinatingly close to the Kaplan's model of stress relief through quiet fascination with the natural world (1989): "nature has a calming effect on people and also it's sort of exciting as well it's it holds interest. It seems that many of the benefits that children are thought to derive from playing in natural environments are implicitly recognised by adults in Birchwood (see Chapter 2, "Literature Review", page 9, for a detailed account of these benefits.

The possibilities for adventurous play

A number of respondents talked about the opportunities for adventurous play in Birchwood's green settings and in the woodland:

AJ: "Yep so I mean we probably covered most of this but are there any advantages and disadvantages of the woodland that you can think of that we haven't already mentioned?"

Mrs R: "I don't think so, I mean it it's obviously a the kids love it, because it's somewhere a bit different and a bit more adventurous than...you know just going on the swings or something."

...

AJ: "What makes you say that?"

Mrs R: "Well there's a lot of ponds that they can go and mess in...especially between here and ASDA."

AJ: "Yes, do you actually see children do that?"

Mrs R: "Yeah they go with their nets...and they go you know with grandad and dip...and things like that, and look at things, you've got that advantage for the kids".

Mr Mc: "Yeah and the kids'll play out here, spent hours outside it's fantastic."

Ms N: "Yeah they do they go through the woodland and all don't they?"

Mr Mc: "Yeah they do dens in the wood and stuff and it really is very good [inaudible]".

Mr S: "My eldest and my middle child would be allowed to go with friends and they build dens and climb trees and yeah in I mean den building's quite a big event here yes."

AJ: "And you feel ok about that, well it's ok if it's possible, you don't prevent them from doing it?"

Mr S: "Well I mean it was it was I mean obviously today you feel, certainly a lot more how can I say, when I when I was young, just the way society's changed but I was given a lot more freedom than my children... with experience, you know when I think about it, my mother didn't know where I was from one hour to the next, but you know you like to know where your children are now, and it is very local, I mean if you're out in the garden you can hear them most of the time so you know laughing or joking or doing whatever their doing so and that was something I used to enjoy as a child was building dens and climbing trees and exploring and things you know so".

The interviews also revealed considerable issues about the constraints that are placed on children because of fears for their safety, and about a perceived change in children's preoccupations. These issues are explored in more detail later in this chapter.

A third of the Birchwood respondents who answered the question thought that there were good facilities for children and young people in Birchwood, and 14% thought there were insufficient facilities. A marginally greater proportion of the control group from outside Birchwood thought there were good facilities in their local area (38%), and a marginally smaller proportion thought there were insufficient facilities (13%). The interviews indicated that many respondents from Birchwood felt that there were insufficient facilities for young people in Birchwood, and this was thought to be a major contributing factor to young people congregating around the local centres. Here three respondents from Locking Stumps, Gorse Covert and Birchwood give their views:

Mrs W: "We all have our own groans of sort of teenagers with no where to go and like I say the old skateboard park and outside the shop and that's quite threatening if you go at sort of 8 o'clock for some milk and there's 20 teenagers with no-where to go drinking cider outside the shop. The main crime we've had, I've not heard of many burglaries here so it's mainly car crime, you have people letting down tyres and body badges pinched having their car stolen twice from here, and locks drilled and things like that you know people breaking in to cars, so it's mainly sort of and again I think that's the sort of kids with no-where to go and nothing to do".

AJ: "sort of looking at Birchwood as it is now, how do you think it could be improved, is there anything obvious that you know you're always sort of thinking about?"

Mrs F: "Well not that I'm always thinking about cause my children are grown up but I think if there were more for the young ones to do cause you get you know the early teenagers they're not...they're not old enough obviously to go into the pub and but yet they still want to meet up with their friends and it is risky for them I think I suppose that's why you get them just hanging round the shop or something at night time which it's not it's not good really is it for them so we could do with something even as I say mine have grown up now and we just made sure they had loads to do hobbies and stuff to keep them but that is the thing that I think you know for the up and coming children."

AJ: "so what benefits do you think children and young people get from living in Birchwood?

Mrs Wr: "Not a lot at the moment."

Mr Wr: "Yeah they've got they've got the fresh air."

Mrs Wr: "Yeah they've got the fresh air but as for any"

Mr Wr: "What ever they say whatever any parent says it comes back to the old thing, oh there's nothing for them to do, I think I said that my dad twice and both times he found something for me to do and if they just want to let them get up in the morning and watch TV and videos that's the parents' fault as far as I'm concerned."

Mrs Wr: "Oh yeah."

Mr Wr: "There's plenty for people to do if they get off their back sides away from computers and stuff and do it but it seems as if everybody's happy as long as the kids are quiet we don't care where they are as long as they're quiet, there is plenty for people to do if they want to do it."

> **Mrs Wr**: "Yeah but in some ways yeah but in others no because when you go back to when we was youngsters and I'm not talking toddlers where you needed mum with you when you could go off on your own you'd got a picture house you could go to Saturday matinee was the kids' Saturday afternoon [inaudible] you know and there's no picture house here."

Thus, whilst Birchwood's green environment was seen as beneficial for *children* by many respondents in Birchwood, there was also a widespread perception that this environment did not provide enough for *teenagers*, though as the interchange between the last two speakers shows, there were also respondents who did not feel that this was a valid concern. A detailed examination of the existing facilities for teenagers is outside the scope of this study, but these findings do seem to suggest that there are insufficient places in Birchwood where teenagers can "legitimately" be.

Only 27% of Birchwood respondents who answered the question cited the quality of the local community as an advantage of bringing up children in their local area, compared to 35% of respondents from the control group from outside. On the other hand 29% of the control group gave "anti-social behaviour" as a disadvantage of bringing up children in their local area, compared to only 17% of Birchwood respondents.

Only 10% of the respondents from Birchwood who answered this question thought that "street/estate layout" was one of the advantages for children in Birchwood, compared to 15% of respondents from outside Birchwood. This is surprising given that most of Birchwood's estates are based on a "cul de sac" model, which was spoken of in positive terms by several respondents during the interviews. It may be that this is simply not seen as a very important issue, but again this is surprising given that the respondents thought the main danger to children was from "traffic accident". It may be that the difference between the Birchwood respondents and the control group is caused by the amount of shrubby vegetation present on Birchwood's residential streets. During the interviews several respondents expressed concerns about children being concealed from car drivers by this vegetation:

> **Mrs W**: "something like this big hedge here that the big square one on the corner, does actually block the view for children from cars and things like that."

The quality of the local community together with "local green space/green setting", "good facilities" and "good/accessible schools" were the advantages most commonly mentioned by Birchwood respondents.

What are the impacts of demographic variables such as gender, age, occupation and education on the perception of children's safety?

The impact of the demographic variables tested for (gender, age, occupation, education and presence of children in the family) was surprisingly limited. Given the findings in Chapter 8 dealing with gender differences in adults' perception of their own safety it is surprising that gender had so little impact on the perception of children's safety, the only exception being that male respondents were significantly more likely to identify " local facilities" (local shops and pubs) as unsafe places for children. It is especially surprising that gender did not appear to influence the respondents' propensity to choose "green spaces" as unsafe places for children in the local area, as the interviews contained several examples of gender differences over this issue. On the basis of the interviews alone it seemed that women were more likely to regard "green spaces" as unsafe places for children than men:

> **Mr M**: "They'd probably be at more risk playing on their own in a more public place."
>
> **Mrs M**: "I disagree."
>
> **Mr M**: "Do you?"
>
> **Mrs M**: "Sorry I know it's not my I know it's not my questionnaire but I disagree."
>
> **AJ**: "No I think that's fine, I'm very interested."
>
> **Mrs M**: "I think if it was more maintained and was more of a parkland where children could play it might attract the wrong sort of people anyway because it's so particularly there isn't a way out there's only one way in and one way out which is a good way from the road and you could get all sorts of people hanging out down there which undesirables."
>
> **AJ**: "So maybe that's just an unfortunate consequence of the woodland is that it does create these secluded spaces."
>
> **Mrs M**: "It creates a secluded space which I wouldn't be happy of my little granddaughters playing out there at all and not on their own I mean I would take them I wouldn't them go."

There was some evidence that older respondents in Birchwood were significantly more likely to think that children were less safe in their own homes and gardens, and to regard drugs/alcohol as a more serious risk to children in the local area, but apart from this the respondents' age played no part in their perception of children's safety, or the suitability of their local area for bringing up children.

Again there was some evidence that respondents with certain types of occupation were significantly more likely to feel that children would be less safe in their own homes and gardens, and that gangs posed a more serious threat to children in the local area, compared to respondents with different occupations. Unemployed respondents particularly were less optimistic about children's safety in the home environment, and respondents with manual and partly-skilled occupations saw gangs as a greater risk, both in and outside Birchwood.

The demographic variable that had the greatest impact was the education attainment of the respondents. In particular, there was a significant association between educational attainment and the respondents' tendency to regard "green spaces" as unsafe places for children. Within Birchwood 49% of the respondents who had left school at 16 felt that "green spaces" were unsafe, compared to only 13% of those with undergraduate degrees. However, outside Birchwood the position is completely reversed: 60% of respondents with undergraduate degrees believe "green spaces" to be unsafe,

compared to 30% of those who left school at 16. This may have something to do with the fact that outside Birchwood 75% of the respondents with undergraduate degrees are concentrated in one HCA, namely Coppice. This suggests that any relationship between education attainment and perception of the danger to children posed by "green spaces" is tenuous, and that perception of children's safety is more likely to be connected with other factors such as the physical and demographic characteristics of the local environment.

The educational attainment of the respondents was also significantly associated with their tendency to identify "local facilities" (local shops and pubs) as unsafe places for children in the local area, though there was no consistent trend across the whole sample. Respondents with some form of higher education were significantly more likely to view "traffic accident" as a more serious risk to children than respondents without any higher education, and this trend was consistent across the whole sample.

The presence or absence of children under 18 in the family did not influence the respondents' views on children's safety, or the suitability of their local area as an environment for bringing up children, except in one respect. Respondents with children under 18 had a significant tendency to believe that the risk to children from abduction/assault was *greater* than respondents who did not have children. Thus the decision to invite all respondents to complete part 5 of the questionnaire dealing with children, regardless of whether they had any children of their own, did not significantly affect the results, except in this one respect.

Have the designers' and planners' aspirations for Birchwood as an environment for children been met?

As can be seen from Chapter 4, "History and Context", (page 83), the designers' and planners' vision of Birchwood as an environment for children had three key aspects:

- This environment would provide many opportunities for play proximate to children's homes, especially in natural surroundings characterised by naturalistic vegetation, variations in landform, and small streams and water bodies.
- These natural surroundings would be composed of elements robust enough to withstand the wear and tear of children's play.
- This environment would provide families with many beautiful natural places to visit on their own doorsteps, and would therefore constitute an accessible alternative to visits to remote "Areas of Outstanding Natural Beauty".

Opportunities for proximate play

There were two kinds of opportunities for proximate play that were provided for in Birchwood. The first type consisted of small play areas that formed part of the actual streetscape, in close proximity to dwellings. These usually consisted of play equipment set in areas that were contained and defined by naturalistic vegetation and landform, though sometimes the focus was on providing an interesting natural setting which children were encouraged to personalise by creating dens and tunnels in the vegetation. The second type consisted of naturalistic settings without any play equipment, which were situated close to the dwellings but outside the actual streetscape. Again, these were characterised by

natural elements including naturalistic vegetation, variations in landform, and small streams and water bodies.

A detailed review of the usage and durability of the first type of play space is outside the scope of this study. However, these issues were mentioned during the interviews:

> **AJ**: "Yes yeah, ok one of the designer's main aims in Birchwood was to make the green spaces very usable areas they hoped they would be used in lots of different ways by people of all ages and especially children, you've already given obviously given me some examples of the ways you use these areas, do you think that the green spaces in Birchwood are well used by a wide range of people?"
>
> **Mr Sp**: "A reasonable one but I think there's something gone slightly wrong is there were originally lots of little play areas built into the estates, they've all been demolished."
>
> **AJ**: "People, when you ask people why they always say: 'Oh they were vandalised, and then they took them all out.'"
>
> **Mr Sp**: "No the council the council ripped them out and various reasons because there was one on the end of this street here that has now been grassed over, the neighbour next to it didn't like having the children congregating outside her house, complained and made some comments that oh these are now dangerous that they are rotting and the council because they did not wish to spend the money maintaining them or to maintain them to modern standards where you'd have to put soft mats underneath, to prevent accidents, the easiest option for the council was just to demolish them and in our case at the end of our street was to grass it to plant trees in other areas, they've just taken the things away and left a little tamaced area which is now wasted, which is a shame because the children need amenities, and that as I said before about them playing children it's a loss and I think people have to be not so selfish and think about the community it's better that they have somewhere to play that's nearby that's away from the road and but is reasonably still open and possibly not, I mean some of the areas where they've put them hid them behind trees, some of the parents in this modern day and age might have felt a little vulnerable that they could be attacked, just that the child could be and they'd rather have them nearby I think that's something that you could think about.
>
> **AJ**: "In common with other residents of Cadshaw the Cadshaw Close area you said that you disliked the maintenance of public areas on your street can you tell me what's wrong with the maintenance of public areas?
>
> **Mr P:** " They just don't do it very often, they've got all the what we're told these nice little play areas and they're all just fall into disrepair so they've taken them all away now."
>
> **AJ**: "What actually on Cadshaw Close or?
>
> **Mr P**: "Well the surrounding areas I mean there's little Closes behind it's full of footpaths round here, just all these little play areas and there used to be one just up there, just grass now."
>
> **Mr Sh (Mrs Sh's son)**: "They it's all it's all gone now, parks and things like that, I mean just round just round the close here, we used to have 2 parks
>
> **AJ**: "What little sort of children's play areas?"
>
> **Mr Sh**: "One with one with swings and slides and roundabouts."
>
> **Mrs Sh**: "They were right between the houses, like you've got a you've got houses here and then you've got houses there and in the middle you've got this play area, then the there's a house at the corner there, just in front where the bull bar was, there was a play area there, they took all that away."

These three respondents from low and high housing density HCA's in Locking Stumps evidently felt very aggrieved about the removal of these play areas. However it was also apparent from these and other interviews that some residents wanted the play areas to be removed because of noise from the children, congregating teenagers, and the danger to children from running out of play areas surrounded by bushes into the path of oncoming traffic. One respondent felt that it was inappropriate to surround such play areas with vegetation that would block views in and out for safety reasons,

including both fear of attack, and the presence of rubbish in the vegetation. Whilst these comments may not be representative the impression that is created by them, and a visual inspection of Birchwood, is that this type of play area has not endured. It is difficult to determine whether this is the result of wear and tear caused by children (insufficient robustness?), vandalism and abuse, lack of public support or lack of maintenance by the relevant body. What seems clear is that if such play areas are to be situated on the street, their location needs to be carefully thought about, and visual access to them needs to be maintained to ensure that supervision by adults can take place. These comments are developed further in Chapter 10, "Conclusions".

Comments made during the interviews, as well as the author's own observations, confirmed that children do utilise the second kind of play space situated close to the dwellings, but outside the actual streetscape, characterised by natural elements including naturalistic vegetation, variations in landform, and small streams and water bodies. A detailed study of the extent of their use was outside the scope of this study. During the interviews the respondents put forward two reasons why these spaces may not be used as much as they could be. These related firstly to parents' safety concerns, and secondly to children's changing preoccupations. Here a married couple with grown-up children from Rawlings in Oakwood describe the change in their attitudes towards children's play in Birchwood's green spaces:

> **AJ**: "one of the designer's main aims in Birchwood was to make the green spaces very usable areas, they hoped they would be used in lots of different ways by people of all ages and especially children, do you think that the green spaces in Birchwood are well used by a wide range of people?
>
> **Mrs Wr**: "No I'd say mums all go up to the park with the little ones but as far as older ones they're left to play in the street they are because of the way things are today you you're too afraid to let your kids out of your sight you know but I don't think like there's a grass area up there and down the brook there's plenty of little field areas where the kids could go and kick a ball about but they don't, they kick a ball about out here in the street."
>
> **AJ**: "And why is that because you think their parents won't let them go down there?"
>
> **Mr Wr**: "Yeah."
>
> **Mrs Wr**: "That's right yeah, I know for a fact I wouldn't let mine down the brook you know 9, 10, 11, 12 year olds you know I'd say stay at the front where I can see you know, where when we first moved up here"
>
> **AJ**: "Was it different then?"
>
> **Mrs Wr**: "It was so different cause there's there was 6 and a half years between I had a son and a daughter then there was a 6 and a half year gap and then I had 2 more daughters so obviously the older 2 quite a bit older 6 and a half and nearly 10 years and I wasn't afraid to let them out of my sight, you know they could take the younger ones and away they'd go you know where it well as long as they told me where they were going you know it was fine, no worries, I don't think I'd like to do it these days I wouldn't."

However, a parent with young children from Gorse Covert did permit her son to play in the woods, although it was apparent that she had concerns about his safety:

> **Mrs Wn**: "It's highlighted when something like you know the two girls go missing and then we start questioning it and because if you do walk round the back and you do know the motorway network and the roads, you then start to think well somebody could come in here and be out within seconds before you've even had chance to turn round you know and it is it is quite sort of worrying, I mean mine do play in the wood well Matthew does, Jemma doesn't"
>
> ...
>
> And they do make dens and there's one at the back on Gilderdale that I know he goes to they've built a, well not him but the older ones, they built it initially and he's gone, but it's sort of like he's got his mobile

phone and you're constantly checking and you might drop your guard for a little few weeks but then something else happens and you put you guard up against them to stop your kids from"

On the other hand, a parent with a son aged under 5 from Locking Stumps was adamant that she would not allow her son to play unsupervised in the woodland:

Mrs W: "No I'm not so bothered about him hurting himself, if he hurts himself through play I mean all kids do that I'm quite happy for him to fall off his bike and bang his knee or fall off and break his arm falling out of a tree, that's fine I think it is the thing that I don't know where he is and I would be scared that something would happen to him if I wasn't there, or wasn't with him."

AJ: "And the something happening to him would be?"

Mrs W: "Be abduction yeah."

AJ: "Abduction, an abduction right yeah, no I fully understand that and I'm sure I would feel the same in fact."

Mrs W: "I think in some ways it's sort of, it probably is in his person as well I suppose he is a bit more, because he won't he doesn't go without me you know, he is aware that I'm there and if I'm not he will look for me, so I think perhaps he is going to grow up slightly sheltered I that way which is wrong."

AJ: "Well I don't know maybe it's not wrong I'm not saying it's wrong I'm just interested in those differences."

Mrs W: "No I realise you're not saying it's wrong but I you know I am aware that I could be hurting his development in that way but again I would feel he was safe so I'm justified."

A number of respondents felt that children are no longer interested in playing out of doors:

Mrs Gr: "But I do I do feel there's like a hell of a lot of children but Forest Park there's never full of children...so maybe I don't know, you could do something to attract them more children in there because it is beautiful...you know...we spent a hell of a lot of time there...but I think it's the environment you grew up in...I don't know I was told when we were kids, go out and play, be outside in the fresh air...a lot of kids nowadays are kept in watching TV or on games...so I suppose you know there are all products of our environment my kids are out in the fresh air."

Mr T: "Yeah we've been [to Birchwood Forest Park] on a beautiful summer's day and there's nobody on it no kids playing on it and you think where the hell are they all , we look at each other and say got this beautiful place and then you know there's just nobody using it seems a crime."

AJ: "Yes yeah why do you think that people don't use the those places?"

Mr T: "I don't know there's a small playground area for children and you see children and that but I think grown up children don't play, don't play football they're either watching television or playing with the computer games, they don't seem to get out, I mean for myself".

Some respondents also articulated a concern that children and young people might not find Birchwood's green setting as attractive as they did:

Mrs G: "I like it but sometimes I don't sometimes I feel it can be wasted on youth because...they don't appreciate it."

AJ: "How do you think it will look in 20 years time?"

Mrs OB: "Well I hope it'll look as it is now, but you know you don't know what's going to happen do you don't know whether they're the next generation will appreciate it."

This study did not attempt to determine the extent to which either of these factors prevent children from playing in Birchwood's green and wooded settings. There was clear evidence that some children were permitted to play in these settings and had the motivation to do so.

Beautiful natural places on the doorstep

As Chapter 4, "History and Context", page 83 explains, a central part of the vision for Birchwood was that it would contain beautiful natural areas close to people's homes. These were seen as an accessible alternative to remote "Areas of Outstanding Natural Beauty": accessible because they were close by, and also because they were intended to be used and interacted with, and not just an ornamental framework or setting for the New Town.

During the interviews many respondents indicated that they had used these areas for family activities:

> **Mrs Gr**: "Yeah, a lot of the children do go over there [Oakwood Common]...because like I said they've a mate, cause there's trees there they put a swing rope on...and they have fun, and we played rounders in summer all the families together and played rounders."

> **Mrs Gr**: "I suppose it's more Forest Park...we do go over there quite a lot...I mean I actually am part of a running club...and I do run through there quite a lot...but even at the night time we'll, me and my sister we'll go there...with the children up and whoever else, the neighbour's children...and we'll get a little barbeque...so also the kids and we sit the swings so the kids got chance to go on the swings and they take the ball, so yeah I suppose Forest Park."

> **Mrs OB**: "Sometimes take my grandchildren out up we go to the Risley Nature Reserve, we go in there cause they've got picnic tables".

> **Mrs L**: "We were in Risley Moss the other week and there was two or three families having a picnic cause there's picnic tables in there and then you know you just go a little stroll and there's no and the children can run on a little bit on their own you know but, cause they seem to, you know like going in there for picnics".

> **Mrs Wr**: "I used to take the little ones out, spring summer autumn winter up to Risley Moss you know and didn't matter there could be snow on the ground and if it was you know not raining or not actually snowing or we'd go for walks and that you know."

The interviews therefore indicated that Birchwood's green spaces are used for family activities and outings, as the planners and designers originally intended.

Emerging themes and ideas

There was no evidence that the vegetation density of the HCA's had any impact on the respondent's perception of children's safety in their homes and gardens, their street or in the local area. On the other hand, respondents from higher housing density HCA's were more fearful for children in these environments; presumably because of the perceived higher incidence of crime within these areas, including crimes that might threaten children's safety, such as drug misuse. There may also be a link between the deprivation that has been shown to exist in these areas, and the perception of children's insecurity.

In general, the adults' attitudes towards Birchwood's naturalistic woodland as a setting for children to live in was characterised by many contradictions, as Valentine found in her study of rural parenting (1997). "Green spaces" were the places that were most often thought of as unsafe for children, because it was feared that they would be subjected to bullying or physical or sexual assault in them. Yet paradoxically the greatest danger to children in the local area was seen as "traffic accident", and the least threat was seen as "abduction/assault". Presumably the latter was the most terrifying

possibility, and the fact that "green spaces" were seen as the most likely venue made them seem the most unsafe, even though it was acknowledged that the feared "abduction/assault" was unlikely to occur.

Whilst "green spaces" were commonly regarded as unsafe, reasons connected with Birchwood's "local green space/green setting" were the ones most frequently given for the Birchwood respondents' belief that Birchwood was a good place to bring up children, and Birchwood respondents were significantly more likely to feel that their local area was a good place for children to grow up in than respondents from outside. These places were valued by Birchwood respondents for the opportunities they afforded for children to experience the natural world, and for adventurous play. However, many respondents had worries about permitting their children to experience these environments without adult supervision, and some respondents thought that children were no longer interested in playing in these types of places. Despite these reservations it was clear from the interviews, and from personal observation, that children in Birchwood do use its naturalistic woodland for adventurous and imaginative play, and that families and groups of adults and children also utilise these landscapes for local excursions and social activities.

It seems therefore, that many of the planners' and designers' aspirations for Birchwood as a landscape for children have been fulfilled, with some important exceptions. The practice of locating informal play spaces surrounded by landform and/or naturalistic vegetation on or close to the street itself seems largely to have been a failure, for a variety of different reasons. Further, there is a widespread feeling that Birchwood does not have enough to offer its teenagers. Whilst some respondents thought there were insufficient activities for them, more fundamentally there seemed to be a lack of places for this age group to socialise in. Their presence outside local centres was resented and feared by many respondents.

Chapter 10 Conclusions

This final chapter summarises the most important findings from the four thematic chapters, and draws conclusions from those findings. It defines a series of key concepts for planning or designing with naturalistic woodland, based on the conclusions. These are integrated with the conclusions but emphasised by the use of text boxes and bold text. The final section gives a short evaluation of the ecological woodland approach at Birchwood.

What impact does the presence of naturalistic woodland have on resident's perception of the aesthetic qualities of residential streets and their surroundings?

The landscapes of Birchwood's residential streets

Broadly speaking, the Birchwood respondents appeared to be very satisfied with the landscapes of their residential streets, including their "trees and greenery". In this respect they were no different to the control group from outside Birchwood, except that respondents from the high housing density control HCA, Vulcan, were markedly less satisfied than the respondents from any other HCA, including the high housing density HCA's in Oakwood. This confirmed a trend for respondents from high housing density HCA's to be less satisfied with the visual appearance of their street, and other aspects of it. This trend is probably linked with the deprivation to be found in the high housing density HCA's in this study. Vulcan is the most deprived of all the HCA's, and its respondents were also the most dissatisfied.

Unlike housing density, the vegetation density of the HCA's did not appear to be linked with respondents' approval for the way their street looked. This may be due to the presence of confounding variables in the study; were the HCA's and their residents too different to enable meaningful comparisons to be made between them? Alternatively, it may be that other aspects take priority over physical characteristics such vegetation density. During the interviews, many respondents answered questions about the visual appearance of places by talking about the people who occupy them, suggesting that the degree of care and consideration with which people treat places and their other inhabitants is an important determinant of how those places are perceived. Several interviewees from Oakwood were very concerned about the imminent relocation of people thought to be involved with drugs and other criminal activities from another part of the new town that was being demolished, believing that this would affect them adversely in a number of different ways. It seems reasonable to assume that if some residents are engaged in overtly anti-social activities this will have a profound impact upon other residents' quality of life, and that this will colour the whole experience of living in a place, regardless of the physical characteristics of the streetscape.

This is not to say that the presence of woody vegetation on the street, and in close proximity to people's homes, is unimportant. On the contrary, respondents articulated powerful positive and negative views about it. On the positive side, such vegetation was said to improve the quality of the environment, give the street its character, screen traffic and other buildings, create privacy and

seclusion, and impart a sense of containment and security. On the negative side, respondents complained about shade, damp, disturbance from branches tapping at the window, damage to services and structures, untidiness, encroachment, isolation and insecurity. Woody vegetation on the street was said by some to be a safety hazard for children. It was feared that children could run out from behind clusters of shrubs into the path of oncoming traffic. It was also felt that such vegetation clusters could hide potential assailants, as well as providing a haven for anti-social activities.

A very interesting finding was that respondents from high housing density HCA's were less likely to approve of the "trees and greenery" on their street. Whilst this was barely statistically significant, the interviews confirmed that there were differences in the perceptions of respondents from HCA's with different housing densities; those from higher housing density HCA's felt more dissatisfied with the way in which vegetation was being managed, and less able to take personal control of it. Housing density and housing tenure appeared to mediate respondents' attitudes towards "trees and greenery", though their links with choice of accommodation, size of plot, proximity of peripheral vegetation and ability to manage or control the vegetation. It should be emphasised that there was no real evidence that respondents from the high housing density HCA's disliked "trees and greenery" *per se,* any more than respondents from other HCA's, though unemployed respondents were less likely to approve of the "birds and wildlife" on their street. Rather, it was the proximity of the vegetation and their inability to control it that was seen as problematic.

Whilst some respondents complained about the type of vegetation on their street, or adjoining their properties, many were not concerned about the choice of plant species in these locations. Generally speaking, it was the size, structure and proximity of the vegetation that seemed to cause the problems.

Further, for many respondents there was a powerful need to personalise front and back gardens, and any existing vegetation that was perceived as interfering with this process was simply removed.

Gender had a surprisingly small impact on the aesthetic factors: female respondents from Birchwood were more likely to disapprove of the "maintenance of gardens by occupiers" on their street. Whilst it is interesting to speculate about the underlying reason, this study provides no clear explanation. It would be an interesting subject for further research.

Younger respondents in Birchwood (aged 15-24) were less likely to approve of the "birds and wildlife" on their street. This confirms the findings of a number of earlier studies that have concluded that young people, and particularly teenagers, are less interested in nature and wildlife, and more preoccupied with their own concerns (Lyons, 1982; Herzog et al, 2000). Likewise student respondents, the majority of whom were aged 15-24, were also less likely to approve of the "birds and wildlife" on their street.

Older respondents in Birchwood were more likely to approve of the "visual appearance of the houses, "outlook from inside own house and garden" and "the way the street is set out". Rather than indicating

that the elderly are more likely to approve of their environment, or that they like the woody vegetation around their homes more than other age groups, this may simply mean that older people like their home environment because it is somewhere they feel safe, and they prefer engaging in leisure activities at home to going out. One interesting finding was that the elderly respondents from the areas of public housing in Birchwood were more likely to disapprove of the "maintenance of public areas" around their homes.

The Birchwood planners' and designers' attempts to create "gardenesque" landscapes within the housing areas do not appear to have had a lasting impact upon its inhabitants. Such attempts became focused on the substitution of exotic or ornamental species for native ones, rather than creating spaces with fundamentally different qualities to the surrounding naturalistic woodland landscapes. This research suggests that not only do Birchwood residents wish to personalise their front and back gardens, they also dislike naturalistic woody vegetation that encroaches on their living space or interferes with other functions of the street.

Planning/Design Concept I- Woodland on Residential Streets and around Houses

- *Woody vegetation and naturalistic woodland is enjoyed and valued as part of the streetscape, particularly in conjunction with incidental public green spaces, as part of green links that pass through or close by housing areas and as a visual backdrop to back gardens;*
- *Woody vegetation and naturalistic woodland that is used to decorate and structure spaces on the street (including private areas and gardens) has to compete with many other user needs: personalisation of private spaces, visual access to and from the street, supervision of children, as well as car parking and access (where it is inevitable that cars are going to be used). Sensitive design is needed to ensure that user needs are prioritised, especially in high housing density areas where the available space may be limited.*
- *Planting provided for future occupiers in gardens and other private areas may be resented by the occupiers and removed as part of the process of personalisation of private space. Thus it may be more realistic to concentrate the structural elements of such planting within public spaces, to ensure their longevity. This does not mean that planting should not be provided in private spaces for future occupiers; but that it should be acknowledged that such planting might have a limited life span.*
- *Tall woody vegetation in close proximity to people's homes is frequently resented. It is difficult to lay down hard and fast rules as to what is too high or too close, a great deal depends on factors such as aspect, landform and individual personality. However, vegetation 3-4 metres high within 4 metres of back elevations was considered too high by some residents from areas of low, medium and high housing density, though it was acceptable to some other residents of these areas. Woody vegetation may be set back from rear boundaries to increase distance from the rear elevation of dwellings.*
- *Ongoing pro-active management of woody vegetation on or nearby residential streets is essential. This may include identifying maximum height and spread and ensuring that this is not exceeded. There would seem to be powerful arguments in favour of consulting users to try to agree joint objectives, and achieve mutual understanding.*
- *Special maintenance regimes may be needed for areas around dwellings designed for the elderly, or occupied predominantly by them, given the findings that they spend more time at home, and are more concerned about the maintenance of densely vegetated public areas.*

Birchwood's wider woodland landscape

Whilst a number of respondents interviewed had reservations about the proximity and management of the woody vegetation on their street, or adjacent to their homes, they were very positive about Birchwood's woodland structure, with few exceptions. The small number of people who believed that woodland was an unsuitable setting for Birchwood did so on the grounds that there were too many trees, that the trees encroached too much on people's "living space" and that the woodland was unproductive and expensive to maintain.

The advantages of the woodland setting cited by the majority were that: there are accessible green spaces with recreational potential nearby; the woodland has the capacity to absorb development and traffic and act as a buffer between different land uses; the woodland creates an illusion of space; existing natural areas such as Risley Moss have been retained and incorporated into the green structure and the woodland creates a good first impression of Birchwood. The disadvantages mentioned related to safety issues (see below) and the uniformity of the planting alongside Birchwood's roads and roundabouts, making way finding difficult for newcomers. The recent addition of floral hanging baskets at the roundabouts was unanimously welcomed as a sign that local agencies were taking care of Birchwood, and encouraging its residents to do the same. Some respondents felt that the roundabouts themselves should be embellished with plantings of a more ornamental nature.

The future management of Birchwood's woodland structure was a concern to many respondents, including those who valued it. These concerns were articulated as a need for strategic intervention, a decline in standards of maintenance since Birchwood was first built, a desire to see improved maintenance of vegetation bordering footpaths and what was perceived as the lack of expertise of landscape operatives. This perception may be partly due to a misunderstanding of the radical maintenance regimes associated with naturalistic vegetation, such as coppicing, suggesting that such regimes require more explanation then their horticultural equivalents. However, there was also a general acceptance that standards of maintenance had improved since Birchwood Town Council had become involved in the maintenance programme. This may be because the Town Council maintenance team are able to provide a more personalised response to maintenance issues.

Planning/Design Concept II- Woodland as Urban Structure

- *Birchwood's woodland structure is one of the most positively regarded aspects of the overall ecological woodland approach. This suggests that naturalistic woodland has great potential as a large-scale means of structuring housing and new settlements, though the interface between the woodland and the housing has to be handled sensitively, as explained in the preceding section- "Woodland on Residential Streets and around Houses".*
- *Where the road network is contained within a series of woodland belts, as at Birchwood, care should be taken to create a visually diverse landscape by all means available including the use of views and vistas through to the built development and to the wider open landscape;*
- *Transitions or gateways to the residential areas or neighbourhoods, and other areas of more intensive use, should be signified by increased formality or ornamentation. This might involve introducing a formal structure to the vegetation, variations in plant type and species, flamboyant use of colour, or all of these. Subtle incidents such as the use of isolated sculptural tree groupings are unlikely to be a sufficient means of marking these transitions for many members of the lay public. The inclusion of visual foci such as sculptural elements or built structures would also serve to reinforce the important gateway or landmark function of these transitional areas (Lynch, 1960). Landmark features should also mark other important nodes within the woodland structure itself.*
- *One way of accommodating user needs and experiences when planning and designing with naturalistic woodland is to conceptualise the woodland and the spaces within it as making up three different landscape zones: "the wilderness zone", "the cultivated zone' and "the personalised zone".*
    - *Within "the wilderness zone" users can expect to encounter and interact closely with predominantly nature-like or even wild-looking landscapes, and conserving the integrity of these landscapes will take priority over concessions to user's perception of their personal security.*
    - *In "the cultivated zone" there will be clear signs of human intervention and structure including overtly "maintained" landscapes and formal or ornamental plantings, and the priority will be to maximise user's feelings of personal safety.*
    - *"The personalised zone" will usually consist of residents' own homes and gardens but may also include or overlap with the street, or parts of it. In "the personalised zone" residents have control over what is planted and or how vegetation is maintained or managed.*
- *It is not envisaged that the three zones should be discrete or separate from each other: they can overlap or infiltrate each other. Rather, they are intended as a means of planning and design with users' need in mind, and as a means of creating legible landscapes. These three zones can be visualised schematically as in figure 10.1. It should be emphasised that this is a purely schematic drawing.*

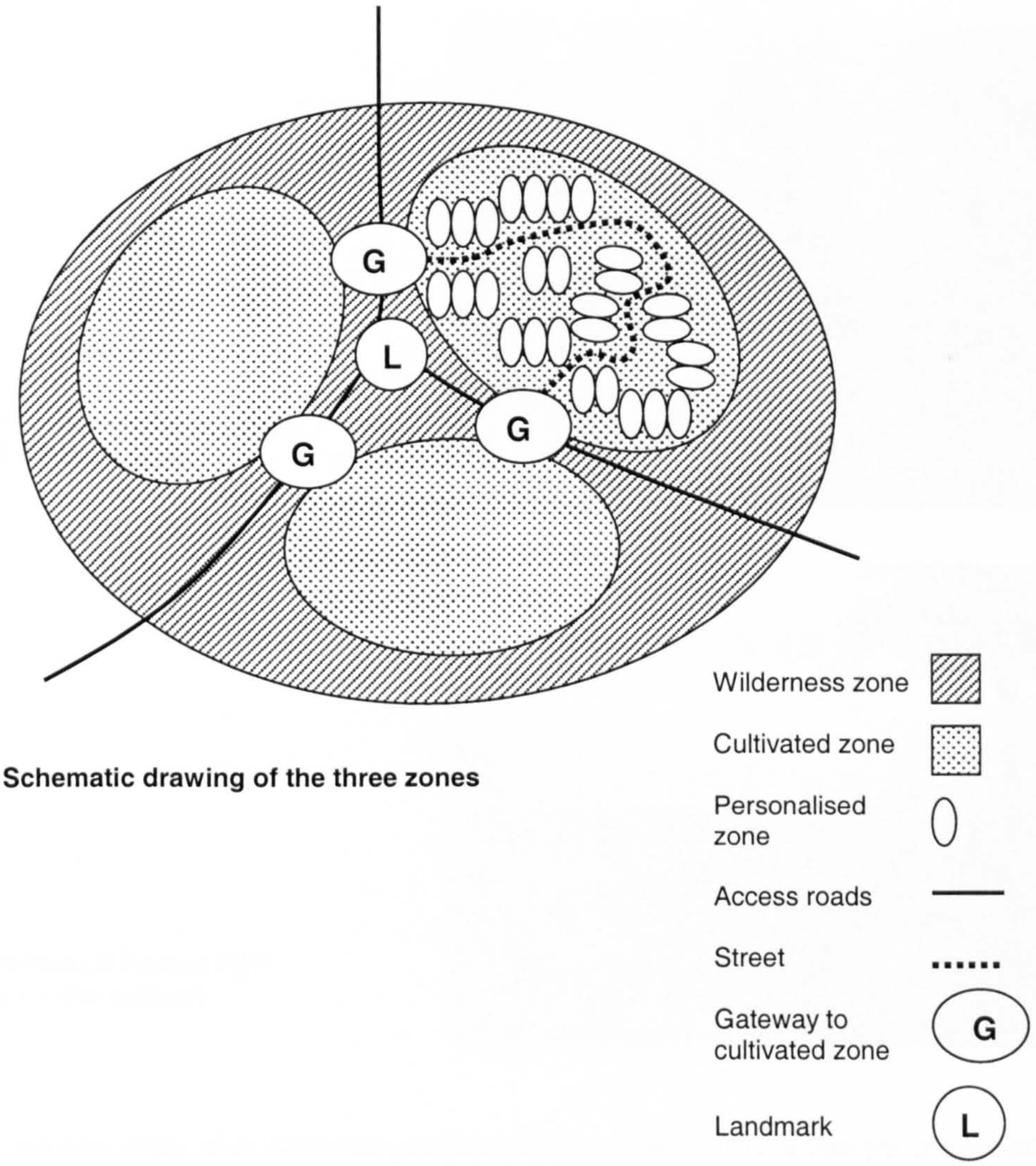

Figure 10.1 Schematic drawing of the three zones

What are the cultural values and meanings that residents of housing set in this type of landscape attach to naturalistic woodland?

"Green spaces" were the spaces respondents most valued in their local area, irrespective of whether they came from Birchwood or from the control areas outside, even where there were competing attractions locally such as shopping centres or the golf club. In Birchwood the most popular green spaces were Risley Moss (chosen by 26% of Birchwood respondents who answered the question) and Birchwood Forest Park (chosen by 18%). The publicly accessible parts of Risley Moss consist predominantly of woodland (figure 10.2), whereas the Forest Park consists of a series of linked open grassed areas, framed by woodland belts (figure 10.3). Both have a strong woodland character. The high esteem in which these places (and other green spaces in Birchwood) are held confirms the value of woodland as a local recreational resource, as indicated by previous research (Tartaglia- Kershaw, 1980; Burgess et al, 1988; Burgess, 1995; Bussey, 1996).

Figure 10.2 Risley Moss, Birchwood (photographed by the author)

Figure 10.3 Birchwood Forest Park (photographed by the author)

Importantly, the present study also confirmed previous research, which found that people sometimes hold ambivalent feelings towards the green spaces they particularly value, which tend to be places that are more nature-like and more densely vegetated (Burgess et al, 1988; Burgess, 1995). On one hand such places are greatly valued parts of the urban fabric, on the other they are places where people feel fearful for themselves and their children. Interestingly, Birchwood respondents were no more fearful about visiting their green woodland spaces than their control counterparts were about visiting their local green spaces, during the day time. They were more fearful about going after dark; but how many people realistically expect to use green spaces after dark in the UK? Thus the fear and risk that is sometimes associated with green spaces, and particularly nature-like and densely vegetated green spaces, should not be used as an argument for sanitising those places, for example, by removing vegetation, but should be counterbalanced by the esteem in which these places are held. This is not to say that measures cannot be taken to make green spaces safer, but not at the expense of divesting them of the very qualities that make them distinctive and valuable in the first place.

The respondents from Birchwood valued its green and wooded spaces, and the vegetation and wildlife found in those spaces for a number of reasons, which may be summarised as:

- A feeling or belief that Birchwood was making a precious contribution towards the conservation of nature and wildlife and that, in Birchwood, humans can co-exist with nature;
- An awareness of seasonal change;

- The potential to engender transcendental experiences;
- Rural idyll;
- Relaxation, tranquillity and stress relief.

The existence of these contradictory feelings about nature-like green spaces strongly suggests that we need to re-examine existing models of landscape preference in which preference and safety are seen as mutually exclusive, and this is an interesting area for further research.

Whilst the naturalistic landscape of Birchwood had its own set of meanings for many respondents these meanings were not necessarily synonymous with Birchwood's identity as a place. This was partly because different respondents had different ideas about Birchwood's physical extent. More importantly, when questioned about Birchwood's identity, most respondents replied by talking about the community, or about social groupings or institutions that represented the community for them. This suggests that place identity is as much to do with concepts of community as it is about the physical landscape. In one sense the landscape is interpreted according to whether it exhibits positive or negative signs of the community. Thus, signs of caring human intervention such as the hanging baskets are greatly valued, whereas signs of vandalism and abuse reinforce negative ideas regarding the community.

How does the presence of naturalistic woodland in an urban setting affect residents' perceptions of their own personal safety?

Generally speaking, Birchwood's woodland setting did not adversely affect the respondents' perception of their own personal safety in their home or its immediate surroundings. In fact, on the whole, the respondents from the medium and high housing density HCA's in Birchwood felt safer in these environments than their counterparts from outside Birchwood. The housing density of the respondents' HCA's was a stronger predictor of feelings of personal security in and around their home environment than vegetation density, with respondents from higher housing density HCA's feeling less secure than those from lower housing density areas. Further exploration of these findings suggested that perception of personal safety in these environments was related to the perceived incidence of crime: respondents from higher housing density HCA's were more likely to believe that crime occurred on their street, and were consequently more fearful.

However, the position was different when the respondents from Birchwood were asked to evaluate their feelings of personal safety in "the local area" (defined in the questionnaire as the area within one mile of the respondents' homes). Birchwood respondents were more likely to identify unsafe places in "the local area" compared to respondents from the control HCA's outside Birchwood. Once again, there was no association between the vegetation density of the respondents' HCA's and their perception of personal safety, but this is perhaps not surprising as they were being asked to evaluate an area outside the envelope of the HCA's themselves. Both respondents from Birchwood and the control HCA's felt that places falling into the categories of "pathways, bridges and underpasses", and "green spaces", were potentially unsafe. Birchwood respondents were more likely to choose these types of places than respondents from the control HCA's outside, but the differences were not

statistically significant. Nevertheless, the findings do suggest that proportionately greater numbers of Birchwood residents feel fearful about using pathways and green spaces in their local area, and that this is due to their densely wooded character. Yet, as previously emphasised in this concluding chapter, these findings about the safety implications of the ecological woodland approach, as practiced at Birchwood, have to be weighed against the value that Birchwood residents attach to their woodland landscape. Further, it must be remembered that the questionnaire asked respondents to evaluate their feelings about being "alone" in the places mentioned. It seems plausible that respondents might feel less fearful about visiting these places in groups of two or more. For many respondents (though clearly not all) the recreational activities that they would pursue in Birchwood's pathways and green spaces are essentially social activities that would be carried out together with members of the family and friends.

Most Birchwood residents who identified unsafe places in their " local area" picked "pathways, bridges and underpasses": 47% of the respondents who answered this question thought that such places were unsafe during the day time, and 40% thought them unsafe after dark. However, many of the respondents from the control HCA's outside Birchwood also identified "pathways, bridges and underpasses" as unsafe (27% during the day time, and 39% after dark) and it appears that urban footpaths have certain generic physical and experiential characteristics that contribute to these feeling of insecurity. These include: enclosure and narrowness (to which trees and shrubby vegetation may contribute), poor lighting, poor drainage and path surface, litter (including evidence of anti-social activities such as needles), lack of maintenance, isolation and fear of assault. It is important to note that enclosure can be created by hard structures such as "high fencing" as well as vegetation (Nasar and Jones, 1997). Both "bridges" and "underpasses" share many of these generic qualities, which explains why they are also considered to be unsafe. Thus it appears that dense vegetation is not the only reason why urban footpaths might be considered unsafe. Acknowledging that urban footpaths do potentially have these generic characteristics does not mean that we have to accept them. There are design strategies available for promoting safety and the perception of safety (Kaplan et al, 1998). Further, it may be easier to pursue appropriate planning/design strategies if we are clear about the different purposes that urban footpaths can serve. This is explored in more detail in *"Planning/Design Concept III- Urban Footpaths"*, below. Finally, in relation to footpaths, it must not be forgotten that this study found that many respondents valued the footpaths in Birchwood for their recreational function and other reasons.

These ambivalent attitudes towards "green spaces" and "pathways, bridges and underpasses" are in marked contrast to respondents' attitudes towards "local facilities" and "built up areas". After the former two types of spaces, Birchwood respondents were most likely to identify "local facilities" as unsafe, whereas respondents from outside Birchwood picked "built up areas". These two types of local places were nearly always identified as places the respondents "particularly disliked", as well as being considered unsafe.

Within the Birchwood sample, female respondents generally felt less safe than male respondents in their home and its immediate surroundings, and were more likely to identify unsafe places in the "local

area". There was also evidence suggesting that female respondents in Birchwood are more likely to identify unsafe places in their local area, compared to female respondents from outside. It seems probable that Birchwood's woodland setting contributes to this increased insecurity. The findings suggest that women may be more sensitive to the safety implications of the extensive use of naturalistic woodland in urban settings, compared with men. Surprisingly, the age of the respondents seemed to have very little impact on their perception of personal security in any of these environments, whereas their occupation and education did appear to be associated with differences in perception of safety. Both in and outside Birchwood, respondents from the "professional" and "managerial and technical" occupations felt safest in their homes and gardens, and on their street, and unemployed respondents felt least safe. Likewise, respondents with higher levels of educational attainment felt safest in their homes and gardens after dark.

There was surprising variation in the way in which "green spaces" and "paths, bridges and underpasses" were perceived within Birchwood alone: different districts had diverse perceptions of these places, confirming that local histories and perceived incidence of crime combine to create "geographies of fear" that are unique to particular places (Valentine, 1989).

Planning/Design Concept III- Urban Footpath Networks

A major shortcoming of the footpath system in Birchwood is that there is no obvious hierarchy of footpaths: major strategic routes have similar characteristics to the more incidental or recreational paths. The findings from this study demonstrate that "pathways, bridges and underpasses" are regarded as the most unsafe urban places, and that dense vegetation in close proximity to these places contributes to feelings of personal insecurity. Conversely, the findings also suggest that the footpaths in Birchwood are valued for many different reasons.

- *This evidence indicates that that there should be a clear hierarchy of footpath networks with different strategies and design approaches applying to footpaths serving different functions in the network hierarchy;*
- *Major footpaths that link local or district facilities and transport nodes and interchanges (e.g. shops, post office, schools, bus stops and railway station) should be hard-surfaced, well-lit, open (not surrounded by vegetation) and direct. Ideally they should be subject to as much informal supervision as possible from passing traffic, adjacent dwellings or other buildings, or from cyclists using combined footpath/cycleways. Locating footpaths alongside roads will often be the best way of meeting this requirement for informal supervision. Such footpaths do not necessarily need to be combined with roads: they can be physically separated by imaginative landscape treatments such as landform manipulation, whilst preserving a visual connection;*
- *Footpaths also have considerable potential as venues for play and social interaction and locating them close to centres of human activity will maximise the opportunities for them to be used in this way (Alexander, 1977).*
- *Woody vegetation, including naturalistic woodland, can still form part of the setting for these major footpaths but considerations such as clear sightlines, openness and informal supervision should take priority;*
- *Footpath networks intended primarily for recreational use may be meandering, with softer, more natural surfacing, and may come into close contact with woody vegetation including naturalistic woodland;*
- *Ideally footpaths should not be routed via bridges or underpasses, especially along routes that are infrequently used; where such structures are inevitable they should be designed for openness and visual access, well-maintained, well-lit, and located away from dense vegetation;*
- *Footpaths users should be given clear and consistent choices between different types of footpath; information about routes and characteristics of footpaths may be communicated by means such as information boards, but also by the design and character of entrances and exits. Users should be confident that a seemingly safe, open and direct route is not going to turn into a meandering adventure through dense vegetation;*

Planning/Design Concept III- Urban Footpath Networks continued

- *There should be a holistic approach to the management of vegetation alongside footpaths: entire footpaths should be managed at one time rather than in sections so that users can be confident that they are not going to encounter overhanging or encroaching vegetation along a footpath that appears at the outset to be well-maintained;*

Many urban footpaths will not fit neatly into one of the two categories described above ("major' and "recreational"). There are many different categories and gradations between. For example, there may well be a need for safe-seeming hard-surfaced recreational paths as well as adventurous ones. The purpose of this design concept is to emphasise that choice, consistency and diversity are essential, as previous commentators have already stated (e.g. Luymes and Tamminga, 1995). Further planning/design guidance is given in "With People in Mind" (Kaplan et al, 1998).

What implications does a naturalistic woodland setting for housing have for the perception of children's safety and how is such a setting regarded as a place to bring up children?

There was no evidence that Birchwood respondents felt that their children were less safe in any of the three environments referred to in the questionnaire ("home and garden", "street" and "local area") compared to the control sample from outside Birchwood. Further, "green spaces" were most commonly identified as unsafe places for children in the local area by both groups of respondents. There was no clear link between the vegetation density of the HCA's and children's perceived safety, or the respondents' propensity to regard "green spaces" as unsafe for children.

During the interviews it became apparent that the nature of the perceived danger to children in "green spaces" was bullying and intimidation, or physical or sexual assault. Yet, in response to the questionnaire, respondents from across the whole sample indicated that "traffic accident" was the greatest danger to children in the local area, and "abduction and assault" was the least danger. There is a clear contradiction here: on the one hand respondents were most likely to identify "green spaces" as unsafe because of bullying and intimidation, physical or sexual assault, on the other hand they considered "abduction/assault" to be the least danger to children in the local area. This suggests that "green spaces" are considered to be unsafe for children because of the nature of the perceived risk, not its likelihood. Although "abduction/assault" is thought of as less likely, it is more terrifying, and the fact that "green spaces" are seen as the ideal places for it to happen makes these places seem the most unsafe by association.

Broadly speaking there was consensus between the Birchwood sample and the control sample as to the nature of the threats to children's safety in the "local area", the only difference being that, in Birchwood, "drugs/alcohol" were seen as a greater risk. However, there was no clear link between this perception and the vegetation density of the HCA's.

After "green spaces" Birchwood respondents were most likely to identify "paths, bridges and underpasses" as unsafe places for children in the local area, and the danger to children in these places was thought to be the same as in "green spaces"; whereas, after "green spaces", respondents from outside Birchwood chose "built-up areas". As in the case of the adults' perception of their own safety, there was considerable variation between the districts in Birchwood in the way "paths, bridges and underpasses" were perceived in terms of children's safety. Respondents from both Oakwood and Locking Stumps thought they were unsafe places for children, but none from Gorse Coverts did. As previously suggested in this chapter, and in Chapters 8 and 9 ("Safety" and "Children", pages 228 and 271 respectively), these differences may be connected with differences in the footpath layouts in these three areas, and with different local "histories".

As might be predicted from earlier findings, respondents from higher housing density HCA's were less confident about children's safety on their street than respondents from lower housing density HCA's. As previously noted, according to the questionnaire findings, respondents from higher housing density HCA's were more likely to feel that crime occurred on their street, and this may explain their increased apprehension. Respondents from lower housing density HCA's were more likely to identify "roads and motorways" as unsafe places for children, and regarded "traffic" as more of a risk to children in the "local area"; whereas respondents from higher housing density HCA's were more concerned about "drugs/alcohol" and "gangs".

Eighty six per cent of Birchwood respondents (compared to 73% of the control sample from outside Birchwood) thought that Birchwood was a good place to bring up children, and the reasons most often given were connected with Birchwood's "local green space/green setting". During the interviews the value of Birchwood's "local green space/green setting" was explored further. Some interviewees felt that Birchwood's green environment was an opportunity for children to have contact with the natural world and that this was important because humans and nature are interdependent, and children need to learn about the nature of this relationship. Contact with nature was also seen as important for its calming effect and inherent fascination.

A number of respondents also talked about the possibilities for adventurous play in Birchwood's green settings, and in the woodland. These findings suggest that many of the developmental benefits that children can derive from adventurous play in natural surroundings (Chapter 2, "Literature Review", page 9) are implicitly recognised by many adults and parents in Birchwood.

However, whilst many respondents talked about the benefits for *younger children* of being brought up in Birchwood, the interviews also indicated that many respondents from Birchwood felt that there were insufficient facilities for *teenagers*, and this was thought to be a major contributing factor to young people congregating around the "local facilities". These groups of young people gathering around the district centres of Oakwood, Locking Stumps and Birchwood were the main cause of these "local facilities" being identified as unsafe places in the local area by large numbers of respondents, and as places that many respondents particularly disliked. Whilst respondents from the control sample outside Birchwood also saw groups of young people gathering as a problem in their local area, the

problem did not seem to be so closely identified with "local facilities". Curiously, male respondents were more likely to identify "local facilities" as unsafe places for children in their "local area", both in and outside Birchwood.

Apart from this, gender, age, occupation and education had remarkably little impact on the respondents' perception of the issues relating to children in this study. One other interesting finding was that respondents from Birchwood with lower levels of educational attainment were more likely to regard "green spaces" as unsafe for children, but the reverse was true outside Birchwood, suggesting that there is no association between educational attainment and perception of children's safety in green spaces.

The planners' and designers' vision of Birchwood as an environment for children had three key aspects, which were:

- This environment would provide many opportunities for play close to children's homes, especially in natural surroundings characterised by naturalistic vegetation, variations in landform, and small streams and water bodies.
- These natural surroundings would be composed of elements robust enough to withstand the wear and tear of children's play.
- This environment would provide families with many beautiful natural places to visit on their own doorsteps and would therefore constitute an accessible alternative to visits to remote "Areas of Outstanding Natural Beauty".

They created several kinds of opportunities for proximate play including small play areas containing play equipment in spaces defined by naturalistic vegetation that formed part of the actual streetscape, in close proximity to dwellings; and naturalistic settings without any play equipment, characterised by natural elements including naturalistic vegetation, variations in landform, and small streams and water bodies, situated close to dwellings but outside the actual streetscape.

Few of the play areas containing play equipment within the actual streetscape have survived. Traces of some of them remain, but generally speaking the original play equipment and most of the vegetation has gone, and has not been replaced. Several respondents in Locking Stumps expressed dismay over their loss. It is difficult to determine whether their disappearance is the result of wear and tear caused by children (insufficient robustness?), vandalism and abuse, lack of public support or lack of maintenance and investment by the relevant body. Certainly the presence of tall dense vegetation around these play areas was resented by respondents for several reasons: it was said to be a safety risk to children who might run out into the path of oncoming traffic from behind the bushes, it prevented supervision of the children and made them vulnerable to attack, and rubbish was said to accumulate in the vegetation.

On the other hand the opportunities for play in naturalistic settings without any play equipment, characterised by natural elements including naturalistic vegetation, variations in landform, and small streams and water bodies, situated close to dwellings but outside the actual streetscape, still remain, and this study provided clear evidence that these spaces are still utilised by children for adventurous

play, both from personal observation and comments made by the respondents during interviews. However, a number of respondents also indicated that children were prevented from playing on these types of spaces because of their parents' fear of the risk of abduction or assault, and that children themselves were no longer as interested in adventurous outdoor play.

The interviews and personal observations also confirmed that Birchwood's green and woodland spaces are used by families for many different kinds of recreational activities, though some respondents claimed that intimidating behaviour from other users and a perceived lack of maintenance were discouraging factors.

Planning/Design Concept IV- Places for Children and Teenagers

Many parents in Birchwood had serious reservations about permitting their children to play in close proximity to woody vegetation, or within Birchwood's woodland structure. However, many parents also recognised the benefits to children inherent in playing in natural surroundings. Play spaces for children should be designed with these factors in mind.

- *Streetscapes serve many different purposes that are not necessarily related to children: pedestrian and vehicular access, social functions (which may include just being able to see people out of the window), statements of common values; personalisation and self-expression and the need for privacy and tranquillity. Nearly all of these functions demand space and compete with children's requirements for play. Thus formal play areas for young children that are located either on or close to the street must be very carefully sited, so as not to conflict with these other needs, failing which they will not be supported by many local residents. In most cases, such play areas are best located within communal open/green space, pocket parks, or where green corridors bisect or adjoin residential areas;*
- *Due to the restrictions being placed on children by their parents the street is becoming more important as a play venue, because it is somewhere for children to play with adult supervision. Even where the streetscape does not provide formal opportunities for young children's play, in the form of equipped play areas, it may still provide an interesting arena for play and children's socialising through good design (Beer, 1990), e.g. through the use of "Home Zones" (Biddulph, 2001);*
- *Whilst not conflicting with the other demands on the streetscape play areas for young children should be located so as to maximise informal supervision from surrounding dwellings and access roads;*
- *Even play areas for young children can be successfully combined with landform and vegetation, but such vegetation must be consistently managed so as to maintain openness and clear sightlines;*
- *Informal opportunities for older children's adventurous play in challenging natural surroundings characterised by landform, naturalistic woodland and water bodies are still valued by some children and their parents, and should therefore be encouraged.*

Whilst the study suggested that some teenagers did use the naturalistic woodland landscape for recreation, it also suggested that many teenagers are less interested in natural landscapes than younger children and adults, and are more preoccupied with their own concerns, which may be of a social or recreational nature. Thus, there is a real need to provide teenagers with activities that are of interest to them, as well as designing public places where they may legitimately be without conflicting with the needs of other local residents. This problem of teenagers congregating is not unique to Birchwood, but seems to have been brought sharply into focus there due to the surrounding woodland being an unsuitable venue for their activities, leading them to gather around the "local facilities".

Implications of the research

This final section assesses the implications of the research findings for woodland planning, design and management within the context of current government housing and green space policy, and contemporary developments in housing, in the UK and in Europe, returning to some of the issues raised in earlier chapters.

Current government policy

PPG1 (DOE, 1997) sets out the government's basic strategic development principles, which are to promote sustainable and mixed-use development and to promote the role of "good design" within the development process. One of the key aspects of sustainable development is said to be the "efficient" use of "already developed " or brown field sites. "Urban villages" are encouraged and their characteristics are said to include "access to public open space and green spaces" as well as a range of other ingredients more commonly associated with this type of development such as mixed use, "compactness", the local provision of facilities, "ready access to public transport" and "high standards of urban design". Further, there is an acknowledgement of the role of landscape within urban design:

> "As the appearance and treatment of the spaces in and around buildings is often of comparable importance to the design of the buildings themselves, landscape design should be considered as an integral part of urban design."

The above principles are set out in more detail in the context of housing in PPG3 (DOE, 2000). There is a clearly stated presumption that "previously developed" sites should be used by local authorities to fulfil housing demand in preference to green field sites. However, housing need (see page 2 for details) dictates that some new housing development must take place on the latter. When allocating sites for housing, local authorities must first look to "previously developed" sites, then to "urban extensions", and finally "new development around nodes in good transport corridors", which can include "new settlements". Whilst there is to be no return to housing provision as part of publicly funded new towns, PPG3 does signal a return to a more strategic and large-scale approach to housing provision, laying down a process and sequence for local authorities to follow in assessing housing need and capacity, and identifying areas and sites to meet that need.

There is a marked emphasis on the "efficient use of land" for housing in PPG3, and clear guidance is given as to what this means in practice. Developments at less than 30 dwellings per hectare are to be discouraged, and the ideal is said to be between 30 and 50 dwellings per hectare. Development at higher densities should be concentrated at locations with "good public transport accessibility", and especially on previously developed land in urban areas (DOE, 1997). The housing densities referred to in PPG3 are net densities and a detailed definition is given, borrowed from "The Use of Density in Urban Planning" (DOE, 1998). Importantly, this definition is virtually identical to the method used to calculate the housing densities of the HCA's in this study (page 38), so that these HCA's can be used as benchmarks within the current housing context. The medium housing density HCA's had densities between 33 and 37 dwellings per hectare, whilst the high housing density HCA's had densities of between 46 and 57 dwellings per hectare. It is not suggested that the housing design and layout of

some of these HCA's should necessarily be copied but that they do provide a useful indicator of the balance between built development and landscape (including access roads, private gardens, car parking, public open space and children's play areas), and the landscape treatments that are compatible with different housing densities.

PPG3 (DOE, 2000) also gives guidance on the characteristics of these new residential environments: aside from mixed use and access to public transport, the importance of "greening" the residential environment is identified for reasons of "quality", "biodiversity" and "sustainability". Further:

> "Landscaping should be an integral part of new development and opportunities should be taken for the retention of existing trees and shrubs, and for new plantings".

Existing open space and recreational facilities are to be respected, and to be provided where none exist within reach of new housing development.

In October 2002 the Office of the Deputy Prime Minister published its policy document "Living Places, Cleaner, Safer, Greener" (ODPM, 2002), and in April 2003 a new wing of the Commission for Architecture and the Built Environment ("CABE"), "CABE Space", was set up to improve quality in parks and green spaces, signifying a resurgence of government interest in this area.

As the title suggests- "Sport, Open Space and Recreation"- PPG17 is somewhat limited in scope; but it does state the importance of green networks for a number of reasons including promoting "sustainable patterns of development" and securing the "permeability" of the urban fabric (DETR, 2001). Further, the multi-functional role and hence the value of "informal open space" is acknowledged. Community Forest and other woodland initiatives in the urban fringe are to be encouraged, and areas of "managed countryside" in the urban fringe are seen as accessible public resources that may obviate longer journeys into rural areas, and protect more fragile environments.

A still more detailed exposition of the government's current housing policy is set out in the previously mentioned "Sustainable Communities: Building for the Future" (page 2). One of the stated aims of PPG3 (DOE, 2000), to locate "new development around nodes in good transport corridors", is given fresh impetus through the support for four key "growth areas" in London and the south east at Thames Gateway, Milton Keynes/South Midlands, Ashford and London-Stansted-Cambridge, and government funding is pledged to pay for items such as site assembly and remediation and infrastructure at these locations.

In "Creating Sustainable Communities: Greening the Gateway" the government sets out a detailed landscape strategy for the Thames Gateway "growth area" (ODPM, 2004). Landscape is to be the "functional green infrastructure" for the whole development and is to form a green network that is "sufficiently bold to provide ecological continuity and physical shelter". New development will be set within this green infrastructure, including "trees and woodland", which will be planted ahead of building construction where possible. Reference is made to "structural planting...established by inexpensive techniques", and to a "low cost ecological style of planting", clear references to the methods and planting styles used at Birchwood.

Current housing context

The findings from this study are highly relevant to this policy context and should be used to inform current developments that are taking place within that context. The following brief discussion will focus on the implications of the research in two main areas: firstly in the area of the strategic planning of urban extensions, new settlements and "growth areas"; and secondly, for the design of high density housing developments on previously developed sites in urban areas.

This study indicates that the strategic use of the woodland network at Birchwood, as an environment for the new settlement, and as an accessible recreational resource, was highly valued by its inhabitants. Further it underscores the need for accessible natural and even wild-seeming environments close to where people live, and preferably within a few minutes walking distance (Tartaglia-Kershaw, 1980; Burgess et al, 1988; Box and Harrison, 1993; Bussey, 1996). These findings, and the many other well rehearsed benefits of woodland, including its potential to provide a locally appropriate setting for development, and to act as a buffer between different and conflicting land uses (see page 3 and PPG17 above), confirm that it should be considered as a strategic option for the setting of the "growth areas", particularly in the context of mixed-use urban development.

Whilst the woodland landscapes of Birchwood are a long way from the types of landscapes that are currently associated with most existing and new social and private housing the UK, there are signs of a sea change. The Peabody Trust, one of the most innovative registered social landlords in the UK, has recently produced an "Ecology Strategy Scoping Document" (2003). One of the key objectives of this strategy is to "enhance residents' access to and engagement with the natural environment". Whilst the Trust recognises that the opportunities for doing this on their own sites may be limited, it sees the creation of strategic links with other more natural green spaces as of crucial importance. It is likely that other social landlords, including those with larger green estates, will follow suit. Whilst it is not suggested that this should result in the creation of woodland on the scale of Birchwood it is desirable that woodland should play a significant part in these developments, for the reasons stated above.

At Kennet Valley Park, Reading, a residential development of 7,500 dwellings, including both social and private housing, is being planned by EDCO Design Ltd and Henning Larsen Tegnestue from Copenhagen on a 800 hectare site comprising worked out wet gravel pits and retained elements of woodland; 80% of the site is to remain undeveloped, and will comprise ecologically driven meadow, woodland and wetland landscapes with emphasis on both conservation and recreation (Edwards, personal communication). There are also controversial plans to build 2,170 new homes (including social housing) alongside the Welsh Harp reservoir in Hendon, London, a SSSI (Kummer, 2003). A landscape "buffer" is to be created between the SSSI and the new development. These initiatives strongly suggest that there is now a public demand for housing that is closely associated with natural green spaces, and that naturalistic, ecologically driven woodland has a significant role to play in future developments responding to this demand.

The conceptual approach described in this final chapter (consisting of the personalised, cultivated and wilderness zones) is a human-centred way of planning and designing with naturalistic and ecologically

driven landscapes. It must be emphasised that this approach is not prescriptive, and does not envisage discrete areas based on these zones. Rather, they should be seen as overlapping continua, or ways of planning and designing for human needs in different contexts. Moreover, the conventional floral displays are not the only ways of marking gateways or transitions between the so-called "wilderness" and "cultivated zones". There are many ways in which landscape designers can express human care and intervention in the landscape and the challenge is to find innovative ways of evoking familiar (and new) responses.

Whilst the study confirms that naturalistic landscapes and especially woodland are seen as dangerous by many people, this does not mean that they are inappropriate in an urban or peri-urban context. For most of the people in this study these were the most valued places in their locality. Further, this study confirmed that for many people such places are simultaneously valued and feared (Burgess et al, 1988). The theoretical basis for this anomaly remains unexplained, and this is an important area for further research, but these findings also have practical implications. There are ways of making woodland environments feel safer (Burgess 1995; Kaplan et al. 1998); but they can never be made to feel completely safe without stripping them of the qualities that make them attractive to people in the first place. Thus, when planning and designing with naturalistic and woodland landscapes the crucial factors are choice and legibility. There are many ways of experiencing such landscapes, ranging from just knowing they exist, to actively interacting with them. A wide range of options should be incorporated into these landscapes and no-one should be forced to interact with them as part of the process of daily living. It is essential that footpath networks incorporate these choices and ranges of experience. Green networks will do nothing to contribute towards the permeability of modern urban landscapes (PPG17) if they do not incorporate legible choices making them accessible to a wide range of people.

There are also other important considerations such as maintaining visual access and permeability. Where woodland is used to create a strategic framework for new development it must not be allowed to obliterate existing landmarks or important views and sightlines. Views through to both the wider landscape and built development can retain local distinctiveness and create a legible and coherent landscape structure. Further, the use of naturalistic or even ecologically driven woodland should not be constrained by existing somewhat monotonous approaches, including those used at Birchwood. There is enormous potential to create ecological woodland landscapes of great visual and experiential richness and diversity that has not yet been fully exploited (Gustavsson, in press).

On a smaller scale the findings from this study are also relevant to the design of the high density urban housing developments on brown field sites advocated in PPG3 (DOE, 2000). This study shows that it is logistically possible to incorporate high densities of trees and shrubby vegetation within the landscapes of such developments at the prescribed housing densities between 30 and 50 dwellings per hectare. A contemporary example showing how this can be done very effectively can be found at Berliner Strasse 88, Zehlendorf, Berlin, a mix of social and private housing. Here the perimeter housing blocks enclose a series of courtyards and green spaces that link up with a green corridor to the south of the development. The courtyards themselves (from which cars are excluded) are

designed around a sustainable urban drainage system and incorporate some private gardens and plentiful children's play facilities set within a dense vegetation of trees and shrubs. This development was designed with feedback from the residents and a visual inspection of the landscape suggested that it is a respected and valued environment.

The question arises as to whether such an approach would find favour here in the UK? This study suggests that potential residents would be less tolerant of this high vegetation density approach to the streets and courtyards around their housing for a number of reasons, including concerns about children's safety. In particular the study found that most residents of Birchwood disliked tall dense vegetation in close proximity to their homes, and that less affluent people who rented as opposed to owning their own homes found such vegetation more oppressive due to their inability to control or manage it. Further, many Birchwood residents display a need to personalise their own living spaces, including external areas, and have removed trees and shrubs that formed part of the original landscape design, where these conflicted with their own needs and desires. Thus, whilst there could still be a role for naturalistic woodland vegetation within or close to such developments, for example within the pocket parks of developments such as Staiths South Bank in Gateshead, the siting of such vegetation in relation to dwellings, entrances and access routes is of crucial importance, as is its ongoing management. "Planning/Design Concept 1-Woodland on Residential Streets and around Houses" (page 288) contains more detailed guidelines for design and management.

This research also has an important bearing on designing landscapes for children. Birchwood is regarded as a good place to raise a family. The reasons most often given for this view were connected with Birchwood's green spaces; but paradoxically green spaces were the places that were most often thought of as unsafe for children because it was feared that they would be subjected to bullying or physical or sexual assault in them. The risk of such things occurring was considered to be slight compared to the danger to children from traffic. However, because bullying and assault were seen as more terrifying this meant that green spaces were also regarded as the most unsafe places in the locality. This study has previously referred to the developmental benefits children can derive from adventurous play in challenging natural environments (page 9). More recent research has suggested that the bland sanitised playgrounds whose design is determined by considerations of health and safety simply do not provide the necessary challenges (Moorcock, 1998; Knight, 2000; Cunningham, 2002; McKendrick, 2004). Naturalistic landscapes including woodland can provide the challenging playscapes that children need, and this is another powerful argument in favour of placing such landscapes within easy reach of housing, as part of the green network into which development is placed. Whilst it will usually be difficult to incorporate full-blown naturalistic landscapes within the fabric of the development itself due to space constraints and issues of public acceptance, characteristics of such landscapes such as varied topography and ground texture, trees, shrubby vegetation and water can be included as part of the setting for children's play facilities, as they have been at Zehlendorf.

Summary

In brief, this study confirms that there is currently a vital strategic role for naturalistic and ecologically driven woodland as a setting and structure for many types of new development. Such vegetation

should be within easy reach of people's homes. This concluding chapter sets out clear principles that will aid the strategic planning of these woodland environments (page 290).

There is also a place for naturalistic vegetation including trees and shrubs within the fabric of housing developments but its integration should not become an imperative, as at Birchwood: the spaces around houses have many different conflicting functions to perform, and skilled design is need to ensure that all these functions are accommodated. Where naturalistic vegetation including trees and shrubs do form part of these spaces, a clear proactive management programme is needed to ensure that the vegetation remains within acceptable parameters. More detailed guidelines for the design and management of such vegetation on residential streets and around houses are set out on page 288.

Akbari, H. and Taha, H. (1992) The impact of trees and white surfaces on residential heating and cooling energy use in 4 Canadian cities. *Energy* 17(2), 141-149.

Akbari, H., Pomerantz, M. and Taha, H. (2001) Cool surfaces and shade trees to reduce energy use and improve air quality in urban areas. *Solar Energy,* 70(3), 295-310.

Akbari, H. (2002) Shade trees reduce building energy use and CO_2 emissions from power plants. *Environmental Pollution,* 116, S119-S126 Suppl. 1.

Alexander, C. (1977) *A pattern language.* Oxford University Press, New York, USA.

Appleton, J. (1975) *The Experience of Landscape.* Wiley, London, UK.

Austin-Smith Lord Partnership (1969) *Warrington New Town Consultants' Proposals for the Draft Masterplan.* Warrington New Town Development Corporation, Warrington, UK.

Beckett, K.P., Freer-Smith, P.H. and Taylor, G. (1998) Urban woodlands: their role in reducing the effect of particulate pollution. *Environmental Pollution,* 99(3), 347-360.

Beckett, K.P., Freer-Smith, P.H. and Taylor, G. (2000) Particulate pollution capture by urban trees: effect of species and wind speed. *Global Change Biology,* 6(8), 995-1003.

Beer, A. (1990) *Environmental Planning for Site Development.* E & FN Spon, London, UK.

Balling, J.D. and Falk, J.H. (1982) Development of visual preference for natural environments. *Environment and Behaviour,* 14(1), 5-28.

Bang, C., Braute, J. and Kohen, B. (1989) *Naturleikplassen. Ein Stad for Leik og Laering.* Universitetsforlaget, Oslo, Norway.

Berger, P.L., and Luckman, T. (1966) *The Social Construction of Reality- A Treatise in the Sociology of Knowledge.* Doubleday, Garden City, N.Y., USA.

Biddulph, M. (2001) *Home Zones A Planning and Design Handbook.* The Policy Press, Bristol, UK.

Bonaiuto, M., Aiello, A., Perugini, M., Bonnes, M. and Ercolani, A. P. (1999) Multidimensional perception of residential environment quality and neighbourhood attachment in the urban environment. *Landscape and Urban Planning,* 19, 331-352.

Bonaiuto, M., Fornara, F. and Bonnes, M. (In Press) Indexes of perceived residential environment quality and neighbourhood attachment in urban environments: a confirmation study on the city of Rome. *Landscape and Urban Planning.*

Bos, H.J. and Mol, J.L. (1979) The Dutch example: native planting in Holland. In: Ian C. Laurie (ed). *Nature in Cities.* John Wiley & Sons, Chichester, UK.

Bourassa, S. (1991) *The Aesthetics of Landscape.* Belhaven Press, London and New York.

Box, J. and Harrison, C. (1993) Natural spaces in urban places. *Town and Country Planning,* September 1993, 231-234.

Broadmeadow, M. and Matthews, R. (2003) *Forests, Carbon and Climate Change: the UK Contribution.* Forestry Commission Information Note. Forestry Commission, Edinburgh, Scotland.

Burgess, J., Harrison, C.M. and Limb, M. (1988) People, parks and the urban green: a study of popular meanings and values for open spaces in the city. *Urban Studies*, 25, 455-473.

Burgess, J. (1992) The cultural politics of nature conservation and economic development. In: K. Anderson and F. Gale (eds) *Inventing Places: Studies in Cultural Geography.* Wiley, London, UK.

Burgess, J. (1995) *Growing in Confidence- Understanding People's Perceptions of Urban fringe Woodlands*. Countryside Commission, Cheltenham, UK.

Burgess, R.G. (1984) *In the Field- An Introduction to Field Research*. Routledge, London and New York.

Buttel, F.H. and Flinn, W.L. (1978) Social class and mass environmental beliefs. A reconsideration. *Environment and Behaviour,* 10(3), 433-450

Burton, D. (undated) The use of case studies in social science research. In: (no eds). *Qualitative Methods- Data Collection and Analysis*. Social Sciences Division of the Graduate School, University of Sheffield, UK.

Bussey, S. (1996) *Public use, perceptions and preferences for urban woodlands in Redditch*. Ph.D. thesis, University of Central England, Birmingham, UK.

Buyhoff, G.J., Hull IV, R.B., Lien, J.N. and Cordell, H.K. (1986). Prediction of scenic quality for southern pine stands. *Forest Science* 32, 769-778.

Carson, R. (1962) *Silent Spring*. Houghton Mifflin, USA.

Catton, W.R. and Dunlap, R.E. (1980). A new ecological paradigm for post-exhuberant society. *American Sociologist*, 13, 41-49.

Coeterier, J.F. (1996) Dominant attributes in the perception and evaluation of the Dutch landscape. *Landscape and Urban Planning*, 34, 27-44.

Coleman, A. (1985) *Utopia on Trial. Vision and Reality in Planned Housing*. Hilary Shipman Ltd, London, UK.

Coley, R.L., Kuo, F.E. and Sullivan, W.C. (1997) Where does community grow? The social context created by nature in urban public housing. *Environment and Behaviour*, 29(4), 468-494.

Colquhoun, I., and Fauset, P.G. (1991) *Housing Design in Practice*. Longman Scientific and Technical, Harlow, UK.

Cook, D.I. and Haverbeke, D.F.V. (1974) *Trees and shrubs for noise abatement*. University of Nebraska College of Agriculture Experimental Station Bulletin, RB246.

Cross, A. (1995) *Census Information- Oakwood Ward/Poulton North Ward for Chief Executive (June 1995)*. Warrington Borough Council, Warrington, UK.

Countryside Agency (2002) *Village Design Statements- Their Influence on New Developments*. Research notes, Issue CRN 53. Countryside Agency, Cheltenham, UK.

Countryside Agency (2003) *Town Design Statements- Why and How to Produce them*. Ref: CA 134. Countryside Agency, Cheltenham, UK.

Countryside Agency and Scottish Natural Heritage (2002) *Landscape Character Assessment- Guidance for England and Scotland*. Countryside Agency, Cheltenham, UK.

Countryside Commission (1987) *Landscape Assessment: a Countryside Commission Approach*. Ref: CCD 18. Countryside Commission (now Countryside Agency), Cheltenham, UK.

Cullen, G. (1953) Prairie planning in the new towns. *Architectural Review*, 114, 33-36.

Cunningham, J. (2002) Play on. *Spiked-Life* [online]. Available from: http://www.spiked-online.com/Articles/00000002D387.htm [Accessed 29th January 2004].

Daniel, T.C. and Boster, R.S. (1976) *Measuring Landscape Aesthetics: the Scenic Beauty Estimation Method*. USDA Forest Service Research Paper RM- 167, Rocky Mountain Forest and Range Experiment Station, Fort Collins, CO, USA.

Daniels, S., and Cosgrove, D. (1988) Introduction: Iconography and Landscape. In: S. Daniels and D. Cosgrove (eds) *The Iconography of Landscape: Essays on the Symbolic Representation, Design and Use of past Environments.* Cambridge University Press, Cambridge, UK.

Dearden, P. (1984) Factors influencing landscape preferences; an empirical investigation. *Landscape Planning,* 11, 293-306.

De Boer, N.A. (1982) Emmen, planvorming in de kinderschoenen. *Stedeboow en Volkshuisvesting,* March, 167-180.

De Gorter, D. (1781) Flora VII Provinciarum Belgii Foederati Indigena, Haarlem, the Netherlands.

De Groot, W., and Van den Born, R.J.G. (2003) Visions of nature and landscape type preferences: an exploration in The Netherlands. *Landscape and Urban Planning,* 63, 127-138.

Defoe, D. (1727) *A Tour thro' the Whole Island of Great Britain.* Peter Davies, London, UK.

Department of Environment, Transport and the Regions (2001) *Revision of Planning Policy Guidance Note (PPG) 17 Sport, Open Space and Recreation. Consultation Paper.* Department of Environment, Transport and the Regions, London, UK.

Department of the Environment (1997) *Planning Policy Guidance 1: General Policy and Principles.* Department of Environment, London, UK.

Department of the Environment (1998) *The Use of Density in Urban Planning.* Department of Environment, London, UK.

Department of the Environment (2000) *Planning Policy Guidance 3: Housing.* Department of Environment, London, UK.

Doe, J. (1997) The Dacorum approach. *Urban Design Quarterly,* 62, 24-27.

Dowse, S. (1987) *Landscape design guidelines for recreational woodlands in the urban fringe.* Unpublished Master's dissertation, University of Manchester, UK.

Eiler-Rasmussen, S. (1981) Introduction. In: Derek Walker *The Architecture and Planning of Milton Keynes.* The Architectural Press Ltd, London, UK.

Faber Taylor, A., Wiley, A., Kuo, F.E. and Sullivan, W.C. (1998) Growing up in the inner city- green spaces as places to grow. *Environment and Behaviour,* 30(1), 3-27.

Faber Taylor, A., Kuo, F.E. and Sullivan, W.C. (2001) Coping with ADD. The surprising connection to green play settings. *Environment and Behaviour,* 33(1), 54-77.

Fang, C. and Ling, D. (2003) Investigation of the noise reduction provided by tree belts. *Landscape and Urban Planning,* 63, 187- 195.

Fairbrother, N. (1970) *New Lives, New Landscapes.* The Architectural Press, London, UK.

Fjortoft, I. (1995) Fysisk miljo og sansemotorisk stimulering. Forsknings og udviklingsarbeid med barn i naturen. *Kroppsoving,* 1, s.2-5.

Fjortoft, I. (1998) *Ut I skoven- opp i traernel Naturen- et sted for lek og laering. Konferensrapport. Barn og Friluftliv.* Friluftsframjandet.

Fjortoft, I. (1999) *The natural environment as a playground for children. The impact of outdoor play activities in pre-primary school children. Proceedings of OMEP's 22nd World Congress and 50th Anniversary on the child's right to care, play and education.* Copenhagen, Denmark.

Fjortoft, I. and Sageie, J. (2000). The natural environment as a playground for children. Landscape description and analyses of a natural playscape. *Landscape and Urban Planning,* 48, 83-97.

Flowerdew, R. and Martin, D. (1997) *Methods in Human Geography: a Guide for Students doing research Projects*. Longman, Harlow, UK.

Forbes, S.E., Cooper, D. and Kendle, A.D. (1997) The history and development of ecological landscape styles. In: T. Kendle and S. Forbes (eds). *Urban Nature Conservation- Landscape Management in the Urban Countryside*. E and F N Spon, London, UK.

Forestry Commission (2002) *Forestry Statistics 2002*. Forestry Commission, Edinburgh, UK.

Forestry Commission (2003) *UK Public Opinion of Forestry*. Forestry Commission, Edinburgh, UK.

Francis, K. (1996) Physical activity in the prevention of cardio-vascular disease. *Physical Therapy*, 76(5), 456-468.

Francis, M. (2001) A case study methodology for landscape architecture. *Landscape Journal*, 20(1-01), 15-28.

Garcia-Albarado, C. Ongoing research at the Department of Landscape, University of Sheffield. For information contact cruz.gaali@shef.ac.uk

Gemeente Emmen (1970) *Structuurplan 1980*. Gemeente Emmen, Emmen, the Netherlands.

Getz, D.A., Karow, A., and Kielbaso, J.J. (1982) Inner city preferences for trees and urban forestry programs. *Journal of Arboriculture*, 8(10), 258-263.

Gibberd, F. (1972) The master design; landscape; housing; the town centres. In: H. Evans (ed). *New Towns: the British Experience.* Charles Knight and Co. Ltd., London, UK.

Givoni, B. (1991) Impact of planted areas on urban environmental quality: a review. *Atmospheric Environment*, 25B(3), 289-299.

Gobster, P.H. (1999) An ecological aesthetic for forest landscape management. *Landscape Journal* 18(1), 54-64.

Grahn, P. (1991) *Om Parkers Betydelse*. Stad & Land 93. Sveriges Landbruksuniversitet, Alnarp, Sweden.

Grahn, P., Martensson, F., Lindblad, B., Nilsson and P. Ekman, A. (1997) *Ute pa Dagis*. Stad & Land 45: Movium, Sveriges Landbruksuniversitet, Alnarp, Sweden.

Greater London Council (1965) *The Planning of a New Town*. Greater London Council, UK.

Greenwood, R. and Moffatt, D. (1982) *Implementation Techniques for More Natural Landscapes*. Warrington and Runcorn Development Corporation.

Gustavsson, R. (In press) Chapter in: Nigel Dunnett and James Hitchmough (eds), *The Dynamic Landscape*. E & FN Spon, London, UK.

Haeckel, E. H. P. A. (1866) *Generelle Morphologie der Organismen*. G. Reimer, Berlin, Germany.

Helford, R. M. (2000). Constructing nature as constructing science: expertise, activist science, and public conflict in the Chicago wilderness. In: P.H.Gobster and R. Bruce Hull (eds). *Restoring Nature-Perspectives from the Social Sciences and Humanities*. Island Press, Washington, D.C.

Herzog, T.R., Herbert, E.J., Kaplan, R. and Crooks, C.L. (2000) Cultural and developmental comparisons of landscape perceptions and preferences. *Environment and Behaviour*, 33(3), 323- 346.

Hitchmough, J. and Bonugli, A.M. (1997) Attitudes of residents of a medium sized town in southwest Scotland to street trees. *Landscape Research*, 22(3), 327-337.

Hollway, W. and Jefferson, T. (2000) *Doing qualitative research differently: free association, narrative and the interview method.* Sage, London, UK.

Hough, M. (1995) *City Form and Natural Process*. Routledge, London and New York.

Howard, E. (1945) *Garden Cities of Tomorrow*. Faber and Faber, London, UK.

HRH, Prince of Wales (1989) *A Vision of Britain- A Personal View of Architecture*. Doubleday, London, UK.

Hull, R.B. IV, Buyhoff, G.J., Cordell, H.K. (1987) Psychophysical models: an example with scenic beauty perceptions of roadside pine forests. *Landscape Journal, 6*, 113- 122.

Hull, R.B. IV (1992) Brief encounters with urban forests produce moods that matter. *Journal of Arboriculture,* 18(6), 322-324.

Hull, R.B. IV, and Harvey, A. (1989) Explaining the emotion people experience in suburban parks. *Environment and Behaviour*, 21(3), 323-245.

Hull, R.B. IV, Lam, M. and Vigo, G. (1994) Place identity: symbols of self in the urban fabric. *Landscape and Urban Planning*, 28, 109-120.

Jackson, L.E.(In Press) The relationship of urban design to human health and condition. *Landscape and Urban Planning*.

Jacobs, J. (1994) *The Death and Life of Great American Cities*. Penguin in association with Jonathan Cape, Harmondsworth, UK.

Jorgensen, A., Hitchmough, J. and Calvert, T. (2002) Woodland spaces and edges: their impact on perception of safety and preference. *Landscape and Urban Planning* 60(3), 135-150.

Kaltenborn, B.P. and Bjerke, T. (2002) Associations between environmental value orientations and landscape preferences. *Landscape and Urban Planning*, 59, 1-11.

Kaplan, R. (1977a) Preference and everyday nature: method and application (Swift River drain study). In: D. Stokols (ed). *Perspectives on Environment and Behaviour: Theory, research and Applications*. Plenum, New York.

Kaplan, R. (1977b) Preference and everyday nature: method and application (Alternative strategies in the study of roadside preference). In: D. Stokols (ed). *Perspectives on Environment and Behaviour: Theory, research and Applications*. Plenum, New York.

Kaplan, R. (1985) Nature at the doorstep: residential satisfaction and the nearby environment. *Journal of Architectural and Planning Research,* 2, 115-127.

Kaplan, R. and Herbert, E.J. (1987) Cultural and sub-cultural comparisons in preference for natural settings. *Landscape and Urban Planning,* 14, 281-293.

Kaplan, R. and Kaplan, S. (1989) *The Experience of Nature*. A Psychological Perspective. Cambridge University Press, Cambridge, England.

Kaplan, R., Kaplan, S. and Ryan, R.L. (1998) *With People in Mind*. Island Press, Washington DC, USA.

Kent, M., and Coker, P. (1992) *Vegetation Description and Analysis- A Practical Approach*. Belhaven Press, London, UK.

Klibanski, A., Adams-Campbell, L., Bassford, T., Blair, S.N. Boden, S.D., Dickersin, K., Gifford, D.R., Glasse, L., Goldring, S.R., Hruska, K., Johnson, S.R., McCauley, L.K. and Russell, W.E. (2001) Osteoporosis prevention, diagnosis, and therapy. *Journal of the American Medical Association*, 285(6), 785-795.

Knight, S. (2000) Welcome to the danger zone: A playground which deliberately puts children in harm's way? *The Scotsman,* 17 April.

Kummer, S. (2003) Harp Life at Risk. *Hendon and Finchley Times,* 17 December.

Kuo, F.E., Bacaicoa, M. and Sullivan, W.C. (1998a) Transforming inner-city landscapes Trees, sense of safety, and preference. *Environment and Behaviour,* 30(1), 28-59.

Kuo, F.E., Sullivan, W.C., Coley, R.L. Brunson, L. (1998b) Fertile ground for community: inner city neighborhood common spaces. *American Journal of Community Psychology* 26(6), 823-851.

Kuo, F. E. (2001) Coping with poverty- impacts of environment and attention in the inner city. *Environment and Behaviou,r* 33(1), 5-34.

Kweon, B., Sullivan, W.C. and Wiley, A.R. (1998) Green common spaces and the social integration of inner city older adults. *Environment and Behaviour*, 30(6), 832-858.

Leather, P., Pyrgas, M., Beale, D. and Lawrence, C. (1998) Windows in the workplace - sunlight, view and occupational stress. *Environment and Behaviour*, 30(6), 739-762.

Le Corbusier. (Jeanneret, C.E.). (1923) *Vers une Architecture.* Translated into English by F. Etchells, (1974) Architectural Press.

Lamb, R.J. and Purcell, A.T. (1990) Perception of naturalness in landscape and its relation to vegetation structure. *Landscape and Urban Planning,* 19, 333-352.

Lear, L. (1999) Afterword. In: Rachel Carson. *Silent Spring.* Penguin, London, UK.

Leopold, A. (1949) *A Sand County Almanac and Sketches Here and There.* Oxford University Press, New York, USA.

Loewen, L.J., Steel, G.D. and Suedfeld, P. (1993) Perceived safety from crime in the urban environment. *Journal of Environmental Psychology*, 13, 323-331.

Luttik, J. (2000) The value of trees, water and open space as reflected by house prices in the Netherlands. *Landscape and Urban Planning*, 48, 161-167.

Lutz, A. R., Simpson-Housley, P. and de Man, A.F. (1999) Wilderness. Rural and urban attitudes and perceptions. *Environment and Behaviour*, 31(2), 259- 266.

Luymes, D.T. and Tamminga, K. (1995) Integrating public safety and use into planning urban greenways. *Landscape and Urban Planning*, 33(1-3), 391-400.

Lynch, K. (1960) *The Image of the City.* M.I.T. Press, Cambridge (Mass.), USA.

Lyons, E. (1983) Demographic correlates of landscape preference. *Environment and Behaviour,* 15, 487-511.

Madge, C. (1997) Public parks and the geography of fear. *Tijdschrift voor Economische en Sociale Geografie,* 88(3), 237-250.

Manning, O. (1982) New Directions, 3 Designing for man and nature. *Landscape Design*, 140, 31-32.

Marans, R.W. (In Press) Understanding environmental quality through quality of life studies: the 2001 DAS and its use of subjective and objective indicators. *Landscape and Urban Planning.*

McAuley, E., Blissmer, S., Marquez, D.X., Jerome, G.J., Kramer, A.F. and Katula, J. (2000) Social relations, physical activity, and well-being in older adults. *Preventive Medicine*, 31(5), 608-617.

McHarg, I. (1969) *Design with Nature.* Natural History Press, New York.

McKendrick, J. (2004) Safety, Play and the Commercial Playground. *Generation Youth Issues.* Available from: http://www.generationyouthissues.org.uk/free_play/Safety,%20Play%20and%20the%20Commercial%20Playground.htm
[Accessed 29th January 2004]

McMurdo, and Rennie, L. (1993) A controlled trial of exercise by residents of old people's homes. *Age and Aging,* 22(1), 11-15.

Meacham, S. (1999) *Regaining Paradise- Englishness and the Early Garden City Movement.* Yale University Press, New Haven, USA.

Mishler, E.G. (1986) *Research Interviewing: Context and Narrative.* Harvard University Press, Cambridge, MA, USA.

Moffat, D. (Undated) *The 'Natural Approach' to Structural Open Space at Warrington New Town.* Warrington and Runcorn Development Corporation.

Moorcock, K. (1998) *Swings and Roundabouts: The Danger of Safety in Outdoor Play Environments.* Sheffield hallam University Press, Sheffield.

Moore, E.O. (1982) A prison environment's effect on health care service demands. *Journal of Environmental Systems*, 11(1), 17-34.

Mumford, L. (1960) The garden city idea and modern planning. In: Howard, E. *Garden Cities of Tomorrow.* Faber and Faber, London, UK.

Nasar, J.L. and Jones, K. (1997) Landscapes of fear and stress. *Environment and Behaviour*, 29(3), 291-323.

Nassauer, J.I. (1992) The appearance of ecological systems as a matter of policy. *Landscape Ecology,* 6(4), 239-250.

Nassauer, J.I. (1997) Cultural sustainability: aligning aesthetics and ecology. In: J.I. Nassauer (ed) *Placing Nature- Culture and Landscape Ecology.* Island Press, Washington, D.C., USA.

National Urban Forestry Unit (undated) *Trees Matter! The Benefits of Trees and Woods in Towns.* National Urban Forestry Unit, Wolverhampton, UK.

National Urban Forestry Unit (1998) *Urban Forestry in Practice- Cost Effective Woodland Planting on Derelict Land.* Case Study 1, National Urban Forestry Unit, Wolverhampton, UK.

National Urban Forestry Unit (1999) *Urban Forestry in Practice- New Woodland Planting on Landfill Sites.* Case Study 8, National Urban Forestry Unit, Wolverhampton, UK.

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

OED Online (2003) *Oxford English Dictionary.* [online]. Oxford University Press. Available from: http://dictionary.oed.com/entrance.dtl
[Accessed 2nd September, 2003].

Office for National Statistics (2001) *OOSS User Guide 1990: 06.01.* Office for National Statistics, Fareham, UK.

Office of Population Censuses and Surveys (1990) *Standard Occupational Classification.* HMSO, London.

Office of the Deputy Prime Minister (2002) *Living Places Cleaner, Safer, Greener.* Office of the Deputy Prime Minister, London.

Office of the Deputy Prime Minister (2003) *Sustainable Communities: Building for the Future.* [online]. London, Office of the Deputy Prime Minister. Available from: http://www.odpm.gov.uk/stellent/groups/odpm_communities/documents/page/odpm_comm_022184.hcsp
[Accessed 2nd September 2003].

Office of the Deputy Prime Minister (2004) *Creating Sustainable Communities: Greening the Gateway.* [online]. London, Office of the Deputy Prime Minister. Available from:

http://www.odpm.gov.uk/stellent/groups/odpm_communities/documents/page/odpm_comm_026908.hcsp
[Accessed 7th April 2004].

Opher, P., and Bird, C. (1981) *Architecture and Urban Design in Six British New Towns.* Urban Design, Oxford Polytechnic, UK.

Oppenheim, A.N. (1992) *Questionnaire Design and Attitude Measurement.* Pinter, London, UK.

Orians, G.H. and Heerwagen, J.H. (1992) Evolved responses to landscapes. In: J.H. Barkow, L. Cosmides and J.Tooby (eds) *The Adapted Mind- Evolutionary Psychology and the Generation of Culture.* Oxford University Press, New York and Oxford.

Osborne, F. J. and Whittick, A. (1969) *The New Towns- the Answer to Megalopolis.* Leonard Hill, London, UK.

Pacione, M. (In Press) Urban environmental quality and human wellbeing- a social geographical perspective. *Landscape and Urban Planning.*

Palleschi, L., De Gennaro, E., Sottosanti, G., Vetta, F., Ronzoni, S., Lato, P.F.A. and Marigliano, V. (1998) The role of exercise training in aged subjects with anxiety-depression syndrome. *Archives of Gerontology and Geriatrics*, 381-384, Suppl. 6.

Paluska, S.A. and Shwenk, T.L. (2000) Physical activity and mental health - current concepts. *Sports Medicine*, 29(3), 167-180.

Parsons, R. (1991) The potential influences of environmental perception on human health. *Journal of Environmental Psychology,* 11, 1-23.

Parsons, R. (1995) Conflict between ecological sustainability and environmental aesthetics: conundrum, canärd or curiosity. *Landscape and Urban Planning*, 32, 227-244.

Parsons, R., Tassinary, L.G., Ulrich, R.S., Hebl, M.R. and Grossman-Alexander, M. (1998) The view from the road: implications for stress recovery and immunization. *Journal of Environmental Psychology*, 18, 113-139.

Parsons, R., and Daniel, T.C. (2002) Good looking: in defence of scenic landscape aesthetics. *Landscape and Urban Planning*, 60, 43-56.

Peabody Trust (2003) *Ecology Strategy Scoping Document.* Peabody Trust, London.

Potter, J.J., Speicher, K.E. (1995) *Predicting residential satisfaction. Conference Proceedings Twenty-Sixth Annual Conference of the Environmental Design Association.* p. 98-107.

Pretty, J., Griffin, M., Sellens, M. and Pretty, C (2003) *Green Exercise: Complementary Roles of Nature, Exercise and Diet in Physical and Emotional Well-Being and Implications for Public Health Policy.* CES Occasional Paper 2003-1, Centre for Environment and Society, University of Essex, UK.

Purcell, A.T. and Lamb, R.J. (1998) Preference and naturalness: an ecological approach. *Landscape and Urban Planning,* 42, 57- 66.

Reneman, D., Visser, M., Edelmann, E. and Mors, B. (1999) *Mensenwensen. De Wensen van Nederlanders ten aanzien van Natuur en groen in de Leefomgeving.* Reeks Operatie Boomhut nummer 6. Intomart, Hilversum. Ministerie van Landbouw, Natuurbeheer en Visserij, Den Haag, the Netherlands.

Ribe, R. (1989) The aesthetics of forestry: what has empirical preference research taught us? *Environmental Management*, 13(1), 55-74.

Rishbeth, C. (2001) Ethnic minority groups and the design of public open space: an inclusive landscape? *Landscape Research*, 26(4), 351-366.

Rishbeth, C (in press). Ethno-cultural representation in the urban landscape. (for more information contact c.rishbeth@shef.ac.uk).

Roe, M. H. (2000) The social dimensions of landscape sustainability. In: John F. Benson and Maggie H. Roe (eds). *Landscape and Sustainability.* Spon Press, London, UK.

Rohde, C.L.E. and Kendle, A.D. (1994) *Human Well-being, Natural Landscapes and Wildlife in Urban Areas. A Review.* English Nature, Peterborough, England.

Ruddell, E.J., Gramann, J.H., Rudis, V.A. and Westphal, J.M. (1989) The psychological utility of visual penetration in near-view forest scenic beauty models. *Environment and Behaviour*, 21(4), 393- 412.

Ruff, A.R. (1979) *Holland and the Ecological Landscapes.* Deanwater Press Limited, Stockport.

Ruuskanen, J.M. and Ruoppila, I. (1995) Physical activity and psychological well-being among people aged 65 to 84 years. *Age and Aging*, 24(4), 292-296.

Satoh, T., Sakurai, I., Miyagi, K. and Hoshaku, Y. (1995) Walking exercise and improved neurological functioning in elderly patients with cardiac disease. *Journal of Internal Medicine*, 238(5), 423-428.

Schaffer, F. (1970) *The New Town Story.* MacGibbon and Kee Ltd.

Scheurich, J.J. (1997) A postmodernist critique of research interviewing. In: J.J. Scheurich (ed). *Research Method in the Postmodern.* The Falmer Press, London, UK.

Schroeder, H.W. and Green, T.L. (1985) Public preference for tree density in municipal parks. *Journal of Arboriculture,* 11, 272-277.

Schroeder, H.W. and Cannon, W.N. (1987) Visual quality of residential streets: both street and yard trees make a difference. *Journal of Arboriculture*, 13(10), 236-239.

Schroeder, H. W. and Anderson, L.M. (1984) Perception of personal safety in urban recreation sites. *Journal of Leisure Research*, 16(2), 178-194.

Scott, D. 1983. Landscape as a Structuring Concept- with Special Reference to Warrington New Town. Warrington and Runcorn Development Corporation.

Scott, D. (1995) *The Naturalistic Landscape of Warrington: a Review of its Creation and Management.* Gillespies, UK.

Scott, D. (1999) New Towns. In: Geoffrey Collens and Wendy Powell (eds). *Sylvia Crowe.* LDT Monographs No 2. LDT Monographs, Reigate, UK.

Shaffer, G.S. and Anderson, L.M. (1983) Perceptions of the security and attractiveness of urban parking lots. *Journal of Environmental Psychology*, 5, 311-323.

Sheets, V.L. and Manzer, C.D. (1991) Affect, cognition and urban vegetation- some effects of adding trees along city streets. *Environment and Behaviour*, 23(3), 285-304.

Simpson, A.J. (2000) The post-romantic landscape of Telford New Town. *Landscape and Urban Planning,* 52, 189-197.

Smardon, R.C. (1988) Perception and aesthetics of the urban environment: review of the role of vegetation. *Landscape and Urban Planning*, 15, 85-106.

Stake, R.E. (1995) *The Art of Case Study Research.* Sage Publications, Thousand Oaks, California, USA.

Solnit, R. (2001). *Wanderlust- A History of Walking.* Verso, London, UK.

Sommer, R. and Summit, J. (1995) An exploratory study of preferred tree form. *Environment and Behaviour,* 27(4), 540-557.

Summit, J. and Sommer R. (1999) Further studies of preferred tree shapes. *Environment and Behaviour,* 31(4), 550-576.

Tartaglia-Kershaw, M. (1980) *Urban Woodlands: Their Role in Daily Life.* Masters dissertation, Department of Landscape, Sheffield University.

Taylor, P.S. (1995) *Social and environmental contexts of aging in place: two geographical scales of residential satisfaction. Conference Proceedings Twenty-Sixth Annual Conference of the Environmental Design Association.* p. 107-112.

Těšitel, J., Kušová, D. and Bartoš, M. (2001) Biophilia as the invariant in human thinking A case study- the town of Tabor. *Landscape and Urban Planning*, 53, 29-36.

Thomas, K. (1983) *Man and the Natural World. Changing Attitudes in England 1500-1800.* Allen Lane, London.

Thompson, I.H. (2000) *Ecology, Community and Delight- Sources of Values in Landscape Architecture.* E and F N Spon, London and New York.

Tregay, R. (1980) Holland 1980. *More (and even better!) Ecological Landscapes.* Warrington and Runcorn Development Corporation.

Tregay, R. (1981) Nature and an ecological approach to landscape design: some thoughts on basic philosophy. In: Allan R. Ruff and Robert Tregay (eds). *An Ecological Approach to Urban Landscape Design.* Occasional Paper Number 8, Department of Town and Country Planning, University of Manchester, UK.

Tregay, R. and Ertzgaard, K. (1979) *Sweden- Ecological Techniques in Urban Landscapes.* Warrington and Runcorn Development Corporation.

Tregay, R. and Gustavsson, R. (1983) *Oakwood's New Landscape- Designing for Nature in the Residential Environment.* Sveriges Lantbruksuniversitet and Warrington and Runcorn Development Corporation. Stad och land/Rapport nr 15 Alnarp nr 15.

Tregay, R. and Moffat, D. (1980) *An Ecological Approach to Landscape Design and Management in Oakwood, Warrington.* Warrington and Runcorn Development Corporation.

Trudgill, S. (2001) Psychobiogeography: meanings of nature and motivations for a democratised conservation ethic. *Journal of Biogeography*, 28, 677-698.

Thompson, I.H. (2000) *Ecology, Community and Delight- Sources of Values in Landscape Architecture.* E and F N Spon, London and New York.

Ulrich, R.S. (1977) Visual landscape preference: a model and application. *Man-Environ.Syst.,* 7, 279-293.

Ulrich, R.S. (1984) View through a window may influence recovery from surgery. *Science*, 224, 420-421.

Ulrich, R.S. (1986) Human responses to vegetation and landscapes. *Landscape and Urban Planning*, 13, 29- 44.

Ulrich, R.S. (1993) Biophilia, biophobia and natural landscapes. In: S.R. Kellert and E.O. Wilson (eds). *The Biophilia Hypothesis.* Island Press/Shearwater Books, Washington D.C, USA.

Ulrich, R.S. and Addoms, D.L. (1981) Psychological and recreational benefits of a recreational park. *Journal of Leisure Research*, First Quarter, 43-65.

Valentine, G. (1989) The geography of women's fear. *Area* 21(4), 385-390.

Valentine, G. (1997) A safe place to grow up? Parenting, perceptions of children's safety and the rural idyll. *Journal of Rural Studies* 13(2), 137-148.

Valentine, G. (1999) Doing household research: interviewing couples together and apart. *Area* 31(1), 67-74.

Van den Berg, A.E. and Vlek C.A.J. (1998) The influence of planned change context on the evaluation of natural landscapes. *Landscape and Urban Planning*, 43(1-3), 1- 10.

Van den Berg, A.E., Vlek, C.A.J. and Coeterier, J.F. (1998) Group differences in the aesthetic evaluation of nature development plans: a multilevel approach. *Journal of Environmental Psychology*, 18, 147-157.

Van den Berg, A.E. (1999) Nature images, environmental beliefs, and group differences in the evaluation of natural landscapes. In: A.E. Van den Berg. *Individual Differences in the Aesthetic Evaluation of Natural Landscapes*. Ph.D. thesis, University of Groningen, Netherlands.

Van den Born, R.J.G., Lenders, R.H.J., De Groot, W., and Huijsman, E. (2001) The new biophilia: an exploration of visions of nature in Western countries. *Environmental Conservation*, 28(1), 65- 75.

Van Dijk, H. (1999) *Twentieth-Century Architecture in the Netherlands*. 010 Publishers, Rotterdam, the Netherlands.

Van Kamp, I., Leidelmeijer, K., Marsman, G. and de Hollander, A. (In Press) Urban environmental quality and human wellbeing Towards a conceptual framework and demarcation of concepts; a literature study. *Landscape and Urban Planning*.

Walker, D. (1981) *The Architecture and Planning of Milton Keynes*. The Architectural Press Ltd, London, UK.

Ward, S.V. (1992) The garden city introduced. In: Stephen V. Ward (ed). *The Garden City Past, Present and Future*. E & FN Spon, London, UK.

Warrington New Town Development Corporation (1973) *Birchwood District Area Plan*. Warrington New Town Development Corporation, Warrington, UK.

Weerahandi, S. (1994) *Exact Statistical Methods for Data Analysis*. Springer-Verlag, New York, USA.

Wells, N.M. (2000) At home with nature Effects of "greenness" on children's cognitive functioning. *Environment and Behaviour*, 32(6), 775-795.

West, M.J. (1985) Landscape views and stress response in the prison environment. Unpublished Master's dissertation, University of Washington, Seattle, WA, USA.

Weyerer, S. and Kupfer, B. (1994) Physical exercise and psychological health. *Sports Medicine*, 17(2), 108-116.

Woudstra, J. (In press A) The changing nature of ecology: a history of ecological planting (1800-1980). In: Nigel Dunnett and James Hitchmough (eds), *The Dynamic Landscape*. E & FN Spon, London, UK.

Woudstra, J. (In press B) Landscape of reality. In: Annabel Downs (ed), *Peter Shepheard*. University of Pennsylvania Press, Philadelphia, USA.

Yi, Y.K. (1992) Affect and Cognition Interface in Aesthetic Experiences of Landscapes. Unpublished doctoral thesis, College of Architecture, Texas A&M University.

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Office of Population Censuses and Surveys (1991) *1991 Census*. Office of Population Censuses and Surveys, London.

UK-INFO DISK 2001. [CD-ROM]. (2001) Dublin, i-CD Publishing Ltd.

Appendix 1 Preliminary interview schedule

Anna Jorgensen

Interview schedule for preliminary unstructured interviews

Introduction

- PhD student from Sheffield University
- Publicly funded
- Doing research on what residents of Warrington New Town think of their local landscape

Want to talk to you to find out what people think to help me plan the next stages in my research.

Practicalities

- Establish consent to

⇒ interview

⇒ tape-recording

⇒ publication of extracts from interview

- Data will be confidential in that

⇒ respondent's identity will not be revealed to anyone

⇒ no-one but me will have access to tapes and transcripts

publication of extracts from interview only

Schedule of topics to be covered

- **What is your favourite natural landscape?** What do they understand by "natural" and "landscape"?
- **Do you find the landscape in Birchwood attractive? Do they find the landscape outside their house, in their street, in the area attractive?** Attractive/unattractive places. Underlying reasons for preference.
- **How do you use this landscape? What activities do you carry out in the landscape and where?** Children's use of landscape. Popular and unpopular areas.
- **Is Birchwood a safe place to live for you and your family?** "Safe" and "unsafe" areas. Crime and anti-social behaviour. Connections between safety and landscape.
- **Do people in Birchwood have a strong sense of community?** Neighbourhoods. Social divisions. Explore reasons for presence/absence of sense of community. Connections between sense of community and landscape.
- **Are there other important aspects of the landscape in Birchwood that we have not talked about?**

Appendix 2 Urban landscape character assessment checklist

CHECKLIST FOR THE ANALYSIS OF HOUSING CHARACTER AREAS
Checklist used by Anna Jorgensen in Warrington study

Setting
Any special characteristics of the boundary/context to the housing character area.
Layout and spacing of buildings and spaces
·Fundamental characteristics of the layout and spacing e.g. cul-de-sac, courtyard, grid.
·Relationship of the housing to the street e.g. adjacent, removed, screened.
·Does the housing have an obvious front and back?
·Is the general impression sparse/open/clustered/dense?
Nature of spaces
·Hard or soft.
·Function of spaces?
·Are the spaces large/small/public/private?
·Linkage with other public spaces?
·Views in/out of the character area.
·Characteristics of vegetation in soft or green spaces e.g. naturalistic, formal, amenity.
·Characteristics of hard spaces.

Nature of buildings and boundaries
·Age, type and form of buildings.
·Are buildings homogenous or mixed?
·Height of buildings i.e. number of floors.
·Materials used.
·Existence and form of boundaries e.g. woodland edge; wall; fence; hedge.
Nature of roads and pathways
·Are these straight/winding; through roads/dead ends; clearly delineated or merged with footpaths or other hard surfaces?
·Special features e.g. street trees or other vegetation, patterning in hard materials.
·Are they public/private?
·What is the provision for parking/garaging of vehicles?
·Levels and flow of all forms of traffic e.g. cars, cycles, pedestrians.
General condition of buildings and spaces
·Are buildings and spaces maintained to a reasonable standard?
·Has the original layout/design been customised or altered?
·Evidence of damage to structures and vegetation, litter/rubbish e.g. shopping trolleys, graffiti.

Appendix 3 Schedule for interviews with planners/designers

Interviews with Planners/Designers

Issues

- Where did the idea for woodland as a setting for housing and new settlements come from?
- What were the perceived benefits of the woodland landscape?
- What was the context that made Warrington/Emmen possible?
- The institutions and individuals involved in the project.
- Process of the project.
- To what extent have the original aspirations been realised?
- If it were being done now would it be different?
- Role of landscape management.
- Comments on the research.

Detailed breakdown of issues

Where did the idea for woodland as a setting for housing and new settlements come from?

- Were other options considered?
- What was the function of the woodland?
- Was connectivity with the surrounding landscape considered important and was this achieved?
- Who were the thinkers/writers/practitioners who influenced the woodland concept whether directly or indirectly?
- Did any of the planners/designers visit similar projects in other countries?
- Was the example of other countries followed?
- Were cultural differences considered?
- Where did the designs of the actual housing units come from?

What were the perceived benefits of the woodland landscape?

- What were the perceived health/social/aesthetic/ecological benefits of the woodland landscape as opposed to other more conventional housing landscapes?
- How was it felt that the new residents would react?

What was the context that made Warrington/Emmen possible?

- Policy context.
- Administrative frameworks.
- Funding.
- Did these differ from other comparable projects happening at the time and how?

The institutions and individuals involved in the project

- What were the institutions/agencies?
- Who were the individuals?
- What role did they play?

Process of the project

- How were ideas communicated within the team?
- How did the landscape and architecture professionals work together?

- To what extent if any did the way of working affect the final result?

To what extent have the original aspirations been realised?

- Successes.
- Failures.
- Reasons for both.
-

If it were being done now would it be different?

- What lessons have been learned in terms of design- landscape, housing stock and housing densities?
- Administrative structures.

Role of landscape management

- Importance of management.
- How can appropriate management be achieved?

Comments on the research

- Any other issues
- What should the focus of the research be?
- Other useful references or contacts.

Appendix 4 Postal questionnaire

HOUSING LANDSCAPES POSTAL QUESTIONNAIRE

For office use only

PART 1 YOUR HOME

1 Is your home rented or privately owned? *Please tick the appropriate box*

Rented	☐	1
Privately owned	☐	2
		9

If your home is privately owned please go to question 3

2 Do you rent your home from Manchester District Housing Association, Warrington Borough Council or a private landlord? *Please tick the appropriate box*

Manchester District Housing Association	☐	1
Warrington Borough Council	☐	2
Private landlord	☐	3
		9

3 How many bedrooms does your home have? *Please tick the appropriate box*

1 ☐	2 ☐	3 ☐	4 ☐	5 ☐		1	2	3	4	5	9

4 What type of accommodation is your home? *Please tick the appropriate box*

Flat	☐	1
Terrace	☐	2
Semi-detached	☐	3
Detached	☐	4
		9

5 How many floors or storeys does your home have? *Please tick the appropriate box*

1 ☐	2 ☐	3 ☐		1	2	3	9

PART 2 YOUR STREET

For office use only

This section is about what you think of your street. By "your street" we mean the street or road where you live, which is usually in the first line of your postal address. Questions 6-8 are only about what the street looks like. Later on there are some questions about the activities that take place on your street.

6 Compared to other places you have lived, or other places you know, do you like or dislike the way your street looks? *Please tick the appropriate box to say how much you like or dislike the way your street looks*

Like very much	Like	Neither like nor dislike	Dislike	Dislike very much

1	2	3	4	5	9

7 Which aspects of your street do you like or dislike? *For each aspect listed in the table below please tick **one** of the boxes to indicate whether you like or dislike this aspect of your street*

	Please tick the box below if you LIKE this aspect of your street	Please tick the box below if you DISLIKE this aspect of your street
Birds and wildlife		
Maintenance of public areas e.g. tree and shrub cutting, litter clearance, grass cutting		
Traffic		
Car parking		
Maintenance of gardens by occupiers		
Visual appearance of the houses		
Trees and greenery		
Outlook from inside your own house and garden		
The way the street is set out		
Other- *please describe*		

1	2
1	2
1	2
1	2
1	2
1	2
1	2
1	2
1	2

8 If you could change one thing about the way your street looks what would that one thing be? *Please write your answer in the space below*

For office use only

9 Do the activities listed in the table below take place on your street?

10 If so, are they acceptable to you?

Please tick the boxes in the table below to indicate whether the activity takes place, and whether it is acceptable to you or not

Activity	9. Yes, this activity takes place in my street	10. If this activity takes place in your street, is it acceptable to you or not?	
		Acceptable	Not acceptable
People playing radios or hi-fi's			
Communal activities e.g. neighbourhood watch or street parties			
Bullying, harassment or name-calling			
Ball games e.g. football			
Skateboarding/rollerblading			
Walking to work/school/shops/doctors etc			
Joy-riding			
Walking or jogging for pleasure or exercise			
Crime e.g. violence or theft			
Car parking			
Children playing			
Young people gathering			
Walking the dog			
Vandalism			
People sitting or standing to watch and talk to the family, friends, neighbours and passers-by			
Cars going too fast			
People looking after the children of friends and neighbours			
Walking the baby and/or toddlers			
Other- *please describe*			

1	2		1	2	9
1	2		1	2	9
1	2		1	2	9
1	2		1	2	9
1	2		1	2	9
1	2		1	2	9
1	2		1	2	9
1	2		1	2	9
1	2		1	2	9
1	2		1	2	9
1	2		1	2	9
1	2		1	2	9
1	2		1	2	9
1	2		1	2	9
1	2		1	2	9
1	2		1	2	9
1	2		1	2	9
1	2		1	2	9

PART 3 YOUR LOCAL AREA

For office use only

The questions in this section are about your local area. By "your local area" we mean the area within a radius of one mile of your home.

11 In the spaces provided please name up to 3 places you **particularly like** anywhere in your local area, not including your own home and garden. *Please give enough detail to enable us to find the places ourselves*

1st place
2nd place
3rd place

12 In the spaces provided please name up to 3 places you **particularly dislike** anywhere in the whole of your local area, not including your own home and garden. *Please give enough detail to enable us to find the places ourselves*

1st place
2nd place
3rd place

PART 4 SAFETY

13 How safe do you feel alone **during the daytime** in the places mentioned below?

Please tick the appropriate box to say how safe you would feel

13 How safe do you feel alone during the daytime in the places mentioned below?	**Very safe**	**Safe**	**Neither safe nor unsafe**	**Unsafe**	**Very unsafe**
Your home and garden					
Your street					

1	2	3	4	5	9
1	2	3	4	5	9

14 Apart from your own home, garden and street, are there any places **in your local area** where you would feel unsafe alone **during the daytime?** *Please tick the appropriate box*

Yes ☐ No ☐

If "No", please go straight to question 16 on page 5

15 If you answered "Yes" to question 14 please identify up to 3 of these places. *Please write their names in the boxes below. Please give enough detail to enable us to find the places ourselves*

For office use only

1st place
2nd place
3rd place

16 How safe do you feel alone **after dark** in the places mentioned below?

Please tick the appropriate box to say how safe you would feel

16 How safe do you feel alone after dark in the places mentioned below?	**Very safe**	**Safe**	**Neither safe nor unsafe**	**Unsafe**	**Very unsafe**
Your home and garden					
Your street					

1	2	3	4	5	9
1	2	3	4	5	9

17 Apart from your own home, garden and street, are there any places **in your local area** where you would feel unsafe alone **after dark?** *Please tick the appropriate box*

Yes ☐ No ☐

1	2	9

If "No" Please go straight to Part 5 on page 6

18 If you answered "Yes" to question 17 please identify up to 3 of these places. *Please write their names in the boxes below. Please give enough detail to enable us to find the places ourselves*

1st place
2nd place
3rd place

For office use only

PART 5 CHILDREN IN YOUR LOCAL AREA

19 Do you have any children under 18? Yes ☐ No ☐

1	2	9

If "No" go straight to question 21 below

20 What sex and age are your children?

For each of your children please tick the appropriate box to indicate their sex and write their age in the box provided

Child no	Female	Male	Age
Child no. 1			
Child no. 2			
Child no. 3			
Child no. 4			
Please give same details for any additional children			

1	2	9		9
1	2	9		9
1	2	9		9
1	2	9		9

21 Generally speaking, how safe do you think children are in the places mentioned below?

Please tick the appropriate box to say how safe you feel they are

21 Generally speaking, how safe do you think children are in the places mentioned below?	Very safe	Safe	Neither safe nor unsafe	Unsafe	Very unsafe
Your home and garden					
Your street					

1	2	3	4	5	9
1	2	3	4	5	9

22 Apart from your own home, garden and street, are there any places **in your local area** where you believe children would be unsafe? *Please tick the appropriate box*

Yes ☐ No ☐

1	2	9

If "No" please go straight to question 24

For office use only

23 If you answered "Yes" to question 22 please identify up to 3 of these places. *Please write their names in the boxes below. Please give enough detail to enable us to find the places ourselves*

1st place
2nd place
3rd place

24 Which of the following do you think is the greatest danger to children **in your local area?** *Please put 1 in the box against the greatest danger, 2 in the box against the next greatest danger, and so on until you get to 5. Please put 5 in the box against the least danger*

Child abduction/assault	☐	1 2 3 4 5 9
Traffic accident	☐	1 2 3 4 5 9
Bullying	☐	1 2 3 4 5 9
Drugs/alcohol	☐	1 2 3 4 5 9
Involvement in gangs	☐	1 2 3 4 5 9

25 All things considered do you feel that your local area is a good place to bring up children?

Yes ☐ No ☐ 1 2 9

26 Which aspects of your local area make it a good/bad place to bring up children? *Please write your answer in the space below*

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PART 6 YOUR LEISURE ACTIVITIES

27 Below is a list of possible activities. How often did you do these activities **OUTDOORS IN YOUR LOCAL AREA** in 2000? *For each of the activities listed please tick the appropriate box to say whether you did that activity daily, weekly, monthly, sometimes, or never*

27 How often did you do these activities OUTDOORS IN YOUR LOCAL AREA in 2000?	Daily	Weekly	Monthly	Some-times	Never
Admiring the view					
Sitting or lying down					
Walking the dog					
Sport including cricket, football, hockey, netball, rugby etc					
Fishing					
Running or jogging					
Walking including walking with children					
Collecting wild fruits or other objects					
Skateboarding or rollerblading					
Playing with your children on swings or other play equipment					
Cycling					
Picnicking/eating					
Gardening					
Watching and listening to nature (plants and birds)					
Sunbathing					
Other (please specify)					

28 How important to you are the 5 kinds of leisure activity listed below? *Please put 1 in the box against the most important, 2 in the box against the next most important, and so on until you get to 5. Please put 5 in the box against the least important*

Outdoor leisure activity, for example, one of the activities listed in question 27	1 2 3 4 5 9
Indoor sport e.g. bowling or going to the gym	1 2 3 4 5 9
Leisure activities you do at home e.g. watching TV or cooking	1 2 3 4 5 9
Going out e.g. to a pub, cinema or restaurant	1 2 3 4 5 9
Shopping	1 2 3 4 5 9

Part 7 ABOUT YOU

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This section is about your individual characteristics. We are asking for this information so that we can make better comparisons between groups of people with different characteristics.

29 What sex are you? *Please tick the appropriate box*

Female ☐ Male ☐

1	2	9

30 Which of the following age groups are you in?

Please tick the appropriate box

15-19	20-24	25-29	30-34	35-39
40-44	45-49	50-54	55-59	over 59

1	2	3	4	5
6	7	8	9	10
				99

31 How would you describe your ethnic or cultural origin?

Please tick the appropriate box

Black- African	Black-Caribbean	Black- other (please describe)	Chinese
Indian	Pakistani	White	Any other ethnic group (please describe)

1	2	3	4	5
6	7	8	9	

32 How long have you lived in your local area?

Please tick the appropriate box

All your life ***Please go straight to question 36***	More than 15 years	10-15 years	5-9 years	1-4 years	Less than 1 year

1	2	3	4	5	6
9					

33 Where did you live before? *Please write the name of your former postal town or city in the box provided*

34 Did you grow up in the town or in the country? *Please tick the appropriate box*

Town ☐ Country ☐

1	2	9

35 What was your main reason for moving to your local area? *Please tick one box only*

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35 What was your main reason for moving to your local area?	Please tick the box opposite your main reason for moving to your local area	
Convenient for work		1
Medical facilities		2
Schooling for children		3
Access to the motorways		4
Trees and greenery		5
Housing and/or house prices		6
To be near relatives		7
Other- *please describe*		8
		9

36 Are you:

Please tick the appropriate box

Married or living together with your spouse or partner	Living on your own	Single but living with one or more other adults	
			1 2 3 9

37 What is your occupation or full job title? *Please write your answer in the box provided*

38 What is your spouse or partner's occupation or full job title? *Please write your answer in the box provided*

39 Please put a tick in the box if your education included:

Please tick the appropriate box

School up to age 16	School up to age 18	Qualifications or training e.g. armed forces, nursing, teaching, apprenticeship, GNVQ, OND, HND	Undergraduate degree	Postgraduate course e.g. MA/MPhil/PhD	
					1 2 3 4 5 9

40 How would you describe your current state of health?

Please tick the appropriate box

Best possible	Good	Fair	Poor	Worst possible	
					1 2 3 4 5 9

CAN WE INTERVIEW YOU AND YOU FAMILY?

PLEASE HELP DESIGN THE HOUSING LANDSCAPES OF TOMORROW.

Whoever you are we would like more information from YOU about the matters referred to in this questionnaire to further our understanding of how people feel about the place they live in. There are a number of opportunities to participate further in the project including:

- **A short discussion**
- **Giving your opinion about a small number of pictures of different types of housing landscape**

All discussions and surveys will take place in the privacy of your home or wherever is convenient to you. If possible we'd like other members of your family to become involved in the project as well.

Please tick the box if you are willing to participate further ☐

Please may we have your name, address and telephone number so that we can contact you to arrange a meeting?

Please write your name address and telephone number below

Name:_____

Address (including postcode):

_____

_____

_____

_____

Telephone number: _____

WHETHER OR NOT YOU WISH TO PARTICIPATE FURTHER WE WOULD LIKE TO THANK YOU VERY MUCH FOR TAKING THE TIME TO COMPLETE THIS QUESTIONNAIRE

Appendix 5 Main interviews schedule- individual questions

Specific questions for **** *****

Although there were clearly some positive aspects to living in Vulcan Close one negative aspect that came over fairly strongly was that residents disliked the way their street looks more than the residents of other areas I looked at in Warrington.

Can you provide any explanation for this?

In common with many others from this area you stated that you disliked a number of things about your street, namely
Maintenance of public areas
Car parking
Maintenance of gardens by occupiers
Visual appearance of the houses
Outlook from inside your own house and garden
The way the street is set out

Starting with the maintenance of public areas can you tell me more about the problems with these things?

In common with other residents you identified the parking spaces as the aspect of your street that you most wanted to change.

Can you tell me more about the problems with the parking spaces?

The Vulcan Close area came across as a place where people reported a large amount of anti-social activities but at the same time as an area where there were a lot of children playing, a lot people taking time out to talk to each other and a lot of people looking after the children of friends and neighbours.

Does this agree with your perception of the place?

Like many other residents you identified local shops and facilities and local built up areas as places that you particularly disliked in the local area. You picked the Fearnhead Cross shops, the recycling areas and Blackbrook estate as places that you particularly disliked.

Can you tell me what is wrong with these areas? (And where is the Blackbrook estate?)

People felt more unsafe in their home and garden and in their street in the Vulcan Close area than in any other similar area I looked at in Warrington. On the other hand they felt safer in their local area than in any other similar area I looked at in Warrington.

Can you account for this apparent contradiction in residents' perception of safety?

Residents also felt that their children would be more unsafe in their home and garden and in their street than any other area I looked at in Warrington.

Do you have any comment to make about this?

All things considered you felt that the Vulcan close area was a good place to bring up children?
Would you like to elaborate on this?

Leisure activities
Admiring the view
Sitting or lying down
Walking
Cycling
Watching and listening to nature (NEVER)

Appendix 6 Main interviews schedule- common questions

Interview themes/questions

Confirm that respondent has agreed to be interviewed and have the interview recorded. Explain that the contents of the interview are confidential though some of their comments may be published but these will not be attributed to them and ask them to confirm that they agree to this.

Birchwood
What words would you use to describe the physical appearance of Birchwood to someone else?

What is unique about Birchwood?

What do you think of Birchwood's woodland setting?

Why do you think the designers chose to do it like this?

What are its advantages and disadvantages?

How could it be improved?

How do you think it will look in 20 years time?

Do you have any comments to make about the way Birchwood's public landscapes are maintained?

Can you describe any experience of wildlife in Birchwood?

In what ways is your life different because you live in a very green area?

Favourite places in locality
Refer back to respondent's questionnaire.
What does having [place] in the locality mean to you?

How would you describe it to someone else?

Can you tell me about some of the things that make it your favourite place?

How does it benefit you?

Use of Birchwood's parks and green areas
One of the designers' main aims in Birchwood was to make the green spaces very usable areas: they hoped they would be used in lots of different ways by people of all ages and especially children.

Can you give me some examples of the way you use these areas?

Do you think that the green spaces in Birchwood are well used by a wide range of people?

(If appropriate) Why do you think people don't use them?

What benefits do you think children and young people get from living in Birchwood?

Refer to any pathways in their HCA. What do you think of the system of pathways linking different parts of Birchwood?

What is it like to walk through Birchwood?

(If necessary) What are the problems and what are the good things about walking through Birchwood?

The street
These questions must be specific to respondent's street layout- I need to spend some time before each interview going round the HCA to see what public green there is.

Can you tell me what you think of the approach to hedging/planting in public areas on your street *(if appropriate)?*

What do you think of .....*(give street specific examples of areas of public green)?*

Appendix 7 Main interviews transcription protocol

Protocol for typing up interviews

1. Please use Ariel 10 point, single spacing.

2. Please use the following format:

AJ What do you think of Birchwood's woodland setting?

Name of interviewee e.g. Mrs S Well I think that ...etc

There are some interviews where I interview 2 people. Please record their responses using the above format.

3. Please type every word, even where there are repetitions or where it doesn't seem to make sense. **However, there is no need to type out interruptions or comments that don't add anything significant to the interview e.g.**

AJ What do you think of Birchwood's woodland setting?

Mrs S Well I think that the woods are beautiful in Autumn

AJ Yeah, yeah.

Mrs. S And in there's a place where the primroses grow in Springtime

AJ OK.

Mrs S And I really enjoy driving to work along the expressway and seeing those primroses.

Here it would be better to put:

AJ What do you think of Birchwood's woodland setting?

Mrs Sharkey Well I think that the woods are beautiful in Autumn and in there's a place where the primroses grow in Springtime and I really enjoy driving to work along the expressway and seeing those primroses.

4. There's no need to record evidence of emotional response e.g. laughter, or sounds such as coughing etc.

5. Where there are blanks on the tape (there will be some because sometimes the tape ran out without me noticing) or incomprehensible sections please indicate them consistently.

6. There's no need to type up my comments about consent or confidentiality at the start.

Thanks very much,
Anna Jorgensen.

Work 01142 220621
Mobile 07973 397966
Home 01142 340041 or 01539 621673

Appendix 8 Non-significant test results

In order to simplify the reporting of these results the following tables do not specify whether the results reported were non significant according to the asymptotic, Monte Carlo or exact significance levels. However, the appropriate significance level was used at all times (see Chapter 3, "Methodology", page 48, for an explanation).

Aesthetic factors

Table A1 Effect of location in relation to Birchwood on respondents' choice of aspects of their street to change

Variable	Test	Result
Change design issues	Chi- Square	$x^2 = 2.406$; df = 1; p = NS.
Change parking and circulation issues	Chi- Square	$x^2 = 1.896$; df = 1; p = NS.
Change neighbour issues	Chi- Square	$x^2 = 1.018$; df = 1; p = NS.
Change public green issues	Chi- Square	$x^2 = 0.055$; df = 1; p = NS.
Change maintenance of public areas	Chi- Square	$x^2 = 0.062$; df = 1; p = NS.
Change lighting and signage issues	Chi- Square	$x^2 = 0.948$; df = 1; p = NS.

Table A2 Effect of gender on dependent variables relating to aesthetic factors

Variable	Test	Result
Overall aesthetic preference for the street	Mann-Whitney	Z = -0.703; NS.
Birds and wildlife	Chi- Square	$x^2 = 0.271$, df = 1; NS.
Maintenance of public areas	Chi- Square	$x^2 = 0.316$, df = 1; NS.
Traffic	Chi- Square	$x^2 = 1.318$, df = 1; NS.
Parking	Chi- Square	$x^2 = 0.090$, df = 1; NS.
Visual appearance of houses	Chi- Square	$x^2 = 1.478$, df = 1; NS.
Trees and greenery	Chi- Square	$x^2 = 0.671$, df = 1; NS.
Outlook from inside own house and garden	Chi- Square	$x^2 = 3.644$, df = 1; NS.
The way the street is set out	Chi- Square	$x^2 = 2.440$, df = 1; NS.
Change design issues	Chi- Square	$x^2 = 0.513$, df = 1; NS.
Change parking and circulation	Chi- Square	$x^2 = 0.053$, df = 1; NS.
Change neighbour issues	Chi- Square	$x^2 = 0.971$, df = 1; NS.
Change public green issues	Chi- Square	$x^2 = 1.247$, df = 1; NS.
Change maintenance of public areas	Chi- Square	$x^2 = 2.569$, df = 1; NS.

Change lighting and signage issues	Chi- Square	x^2 = 0.815, df = 1; NS.

Table A3 Effect of age on dependent variables relating to aesthetic factors

Variable	Test	Result
Overall aesthetic preference for the street	Spearman's correlation	rs = -0.064; n = 261; NS.
Traffic	Mann-Whitney	Z = -0.538; NS.
Parking	Mann-Whitney	Z = -0.713; NS.
Maintenance of gardens by occupiers	Mann-Whitney	Z = -1.861; NS.
Trees and greenery	Mann-Whitney	Z = -0.689; NS.
Change design issues	Mann-Whitney	Z = -1.150; NS.
Change parking and circulation	Mann-Whitney	Z = -0.318; NS.
Change neighbour issues	Mann-Whitney	Z = -0.985; NS.
Change public green issues	Mann-Whitney	Z = -0.671; NS.
Change maintenance of public areas	Mann-Whitney	Z = -0.033; NS.
Change lighting and signage issues	Mann-Whitney	Z = -0.783; NS.

Table A4 Effect of occupation on dependent variables relating to aesthetic factors

Variable	Test	Result
Overall aesthetic preference for the street	Kruskal-Wallis	Chi- Square = 4.608; df = 9; NS.
Maintenance of public areas	Chi- Square	x^2 = 12.164, df = 9; NS.
Traffic	Chi- Square	x^2 = 8.034, df = 9; NS.
Parking	Chi- Square	x^2 = 11.312, df = 9; NS.
Maintenance of gardens by occupiers	Chi- Square	x^2 = 16.421, df = 9; NS.
Visual appearance of houses	Chi- Square	x^2 = 11.263, df = 9; NS.
Trees and greenery	Chi- Square	x^2 = 13.874, df = 9; NS.
Outlook from inside own house and garden	Chi- Square	x^2 = 9.298, df = 9; NS.
The way the street is set out	Chi- Square	x^2 = 7.294, df = 9; NS.
Change design issues	Chi- Square	x^2 = 2.787, df = 8; NS.
Change parking and circulation	Chi- Square	x^2 = 7.889, df = 8; NS.
Change neighbour issues	Chi- Square	x^2 = 3.419, df = 8; NS.
Change public green issues	Chi- Square	x^2 = 9.787, df = 8; NS.

Change maintenance of public areas	Chi- Square	X^2 = 8.828, df = 8; NS.
Change lighting and signage issues	Chi- Square	X^2 = 2.489, df = 8; NS.

Table A5 Effect of education on dependent variables relating to aesthetic factors

Variable	Test	Result
Overall aesthetic preference for the street	Kruskal-Wallis	Chi- Square = 2.773; df = 4; NS.
Birds and wildlife	Chi- Square	X^2 = 7.688, df = 4; NS.
Maintenance of public areas	Chi- Square	X^2 = 1.209, df = 4; NS.
Parking	Chi- Square	X^2 = 4.756, df = 4; NS.
Maintenance of gardens by occupiers	Chi- Square	X^2 = 3.566, df = 4; NS.
Visual appearance of houses	Chi- Square	X^2 = 1.744, df = 4; NS.
Trees and greenery	Chi- Square	X^2 = 3.065, df = 4; NS.
Outlook from inside own house and garden	Chi- Square	X^2 = 1.663, df = 4; NS.
The way the street is set out	Chi- Square	X^2 = 7.837, df = 4; NS.
Change design issues	Chi- Square	X^2 = 1.413, df = 4; NS.
Change parking and circulation	Chi- Square	X^2 = 7.028, df = 4; NS.
Change neighbour issues	Chi- Square	X^2 = 2.260, df = 4; NS.
Change public green issues	Chi- Square	X^2 = 3.720, df = 4; NS.
Change maintenance of public areas	Chi- Square	X^2 = 1.413, df = 4; NS.
Change lighting and signage issues	Chi- Square	X^2 = 2.023, df = 4; NS.

Place identity

Table A6 Effect of HCA, vegetation and housing density and district on respondents' tendency to dislike "large built structures" (as opposed to other types of places)

Variable	Test	Result
HCA	Chi- Square	$x^2 = 10.852$; df = 8; NS.
Vegetation density	Mann-Whitney	Z = -1.078; NS.
Housing density	Mann-Whitney	Z = -0.446; NS.
District	Chi- Square	$x^2 = 3.445$; df = 2; NS.
Location	Chi- Square	$x^2 = 1.055$; df = 1; NS.

Table A7 Effect of HCA, vegetation and housing density and district on respondents' tendency to dislike "pathways, bridges and underpasses" (as opposed to other types of places)

Variable	Test	Result
HCA	Chi- Square	$x^2 = 8.505$; df = 8; NS.
Vegetation density	Mann-Whitney	Z = -0.753; NS.
Housing density	Mann-Whitney	Z = -0.911; NS.
District	Chi- Square	$x^2 = 3.445$; df = 2; NS.
Location	Chi- Square	$x^2 = .282$; df = 1; NS.

Table A8 Effect of HCA, vegetation and housing density and district on respondents' tendency to dislike "green spaces" (as opposed to other types of places)

Variable	Test	Result
HCA	Chi- Square	$x^2 = 9.123$; df = 8; NS.
Vegetation density	Mann-Whitney	Z = -0.179; NS.
Housing density	Mann-Whitney	Z = -1.086; NS.
District	Chi- Square	$x^2 = 1.238$; df = 2; NS.
Location	Chi- Square	$x^2 = 0.080$; df = 1; NS.

Table A9 Effect of gender on respondents' choice of favourite and disliked places in the local area

Variable	Favourite or disliked places	Test used	Test result
Green spaces	Favourite	Chi-square	$x^2 = 1.002$; df = 1; NS.
Outdoor recreational spaces	Favourite	Chi-square	$x^2 = 0.016$; df = 1; NS.
Indoor recreational spaces	Favourite	Chi-square	$x^2 = 1.845$; df = 1; NS.
Paths	Favourite	Chi-square	$x^2 = 0.056$; df = 1; NS.
Local facilities	Disliked	Chi-square	$x^2 = 0.852$; df = 1; NS.
Roads and motorways	Disliked	Chi-square	$x^2 = 2.347$; df = 1; NS.
Built up areas	Disliked	Chi-square	$x^2 = 1.122$; df = 1; NS.
Tips, derelict land and structures	Disliked	Chi-square	$x^2 = 0.586$; df = 1; NS.
Large built structures	Disliked	Chi-square	$x^2 = 0.048$; df = 1; NS.
Pathways, bridges and underpasses	Disliked	Chi-square	$x^2 = 0.758$; df = 1; NS.
Green spaces	Disliked	Chi-square	$x^2 = 4.172$; df = 1; NS.

Table A10 Effect of age on respondents' choice of favourite and disliked places in the local area

Variable	Favourite or disliked places	Test used	Test result
Green spaces	Favourite	Mann-Whitney	Z = -0.636; NS.
Outdoor recreational spaces	Favourite	Mann-Whitney	Z = -0.861; NS.
Indoor recreational spaces	Favourite	Mann-Whitney	Z = -1.606; NS.
Paths	Favourite	Mann-Whitney	Z = -0.794; NS.
Local facilities	Disliked	Mann-Whitney	Z = -0.367; NS.
Roads and motorways	Disliked	Mann-Whitney	Z = -0.660; NS.
Built up areas	Disliked	Mann-Whitney	Z = -0.267; NS.
Tips, derelict land and structures	Disliked	Mann-Whitney	Z = -1.041; NS.
Large built structures	Disliked	Mann-Whitney	Z = -0.965; NS.
Pathways, bridges and underpasses	Disliked	Mann-Whitney	Z = -0.012; NS.
Green spaces	Disliked	Mann-Whitney	Z = -1.332; NS.

Table A11 Effect of occupation on respondents' choice of favourite and disliked places in the local area

Variable	Favourite or disliked places	Test used	Test result
Green spaces	Favourite	Chi-square	$x^2 = 14.778$; df = 9; NS.
Outdoor recreational spaces	Favourite	Chi-square	$x^2 = 2.288$; df = 9; NS.
Indoor recreational spaces	Favourite	Chi-square	$x^2 = 16.328$; df = 9; NS.
Paths	Favourite	Chi-square	$x^2 = 5.587$; df = 9; NS.
Local facilities	Disliked	Chi-square	$x^2 = 7.548$; df = 9; NS.
Roads and motorways	Disliked	Chi-square	$x^2 = 7.543$; df = 9; NS.
Built up areas	Disliked	Chi-square	$x^2 = 9.824$; df = 9; NS.
Tips, derelict land and structures	Disliked	Chi-square	$x^2 = 9.120$; df = 9; NS.
Large built structures	Disliked	Chi-square	$x^2 = 9.399$; df = 9; NS.

Table A12 Effect of education on respondents' choice of favourite and disliked places in the local area

Variable	Favourite or disliked places	Test used	Test result
Green spaces	Favourite	Chi-square	$x^2 = 2.426$; df = 4; NS.
Outdoor recreational spaces	Favourite	Chi-square	$x^2 = 7.141$; df = 4; NS.
Indoor recreational spaces	Favourite	Chi-square	$x^2 = 7.496$; df = 4; NS.
Paths	Favourite	Chi-square	$x^2 = 2.955$; df = 4; NS.
Local facilities	Disliked	Chi-square	$x^2 = 7.200$; df = 4; NS.
Roads and motorways	Disliked	Chi-square	$x^2 = 8.723$; df = 4; NS.
Built up areas	Disliked	Chi-square	$x^2 = 3.459$; df = 4; NS.
Tips, derelict land and structures	Disliked	Chi-square	$x^2 = 0.821$; df = 4; NS.
Large built structures	Disliked	Chi-square	$x^2 = 1.914$; df = 4; NS.
Pathways, bridges and underpasses	Disliked	Chi-square	$x^2 = 4.855$; df = 4; NS.
Green spaces	Disliked	Chi-square	$x^2 = 2.396$; df = 4; NS.

Safety

Table A13 Effect of gender on respondents' choice of unsafe places in their local area, during the day time and after dark

Variable	Day time or after dark	Test used	Test result
Local facilities	Day time	Chi-square	$x^2 = 0.454$; df = 1; NS.
Local facilities	After dark	Chi-square	$x^2 = 0.179$; df = 1; NS.
Roads and motorways	Day time	Chi-square	$x^2 = 0.001$; df = 1; NS.
Roads and motorways	After dark	Chi-square	$x^2 = 0.036$; df = 1; NS.
Built up areas	Day time	Chi-square	$x^2 = 1.480$; df = 1; NS.
Built up areas	After dark	Chi-square	$x^2 = 0.947$; df = 1; NS.
Large built structures	Day time	Chi-square	$x^2 = 0.327$; df = 1; NS.
Large built structures	After dark	Chi-square	$x^2 = 0.341$; df = 1; NS.
Pathways, bridges and underpasses	Day time	Chi-square	$x^2 = 0.017$; df = 1; NS.
Pathways, bridges and underpasses	After dark	Chi-square	$x^2 = 0.230$; df = 1; NS.
Green spaces	Day time	Chi-square	$x^2 = 0.237$; df = 1; NS.
Green spaces	After dark	Chi-square	$x^2 = 0.191$; df = 1; NS.

Table A14 Effect of age on respondents' choice of unsafe places in their local area, during the day time and after dark

Variable	Day time or after dark	Test used	Test result
Local facilities	Day time	Mann-Whitney	z = -0.006; NS.
Local facilities	After dark	Mann-Whitney	z = -1.732; NS.
Roads and motorways	Day time	Mann-Whitney	z = -1.528; NS.
Roads and motorways	After dark	Mann-Whitney	z = -0.034; NS.
Built up areas	Day time	Mann-Whitney	z = -0.133; NS.
Built up areas	After dark	Mann-Whitney	z = -1.263; NS.
Large built structures	Day time	Mann-Whitney	z = -1.250; NS.
Pathways, bridges and underpasses	Day time	Mann-Whitney	z = 0.610; NS.
Green spaces	Day time	Mann-Whitney	z = -0.217; NS.
Green spaces	After dark	Mann-Whitney	z = -0.110; NS.

Table A15 Effect of occupation on respondents' choice of unsafe places in their local area, during the day time and after dark

Variable	Day time or after dark	Test used	Test result
Local facilities	Day time	Chi-square	$x^2 = 11.533$; df = 9; NS.
Local facilities	After dark	Chi-square	$x^2 = 5.754$; df = 9; NS.
Roads and motorways	Day time	Chi-square	$x^2 = 1.970$; df = 9; NS.
Roads and motorways	After dark	Chi-square	$x^2 = 10.434$; df = 9; NS.
Built up areas	Day time	Chi-square	$x^2 = 6.684$; df = 9; NS.
Built up areas	After dark	Chi-square	$x^2 = 3.505$; df = 9; NS.
Large built structures	Day time	Chi-square	$x^2 = 2.549$; df = 9; NS.
Large built structures	After dark	Chi-square	$x^2 = 20.973$; df = 9; $p < 0.05$.
Pathways, bridges and underpasses	Day time	Chi-square	$x^2 = 8.079$; df = 9; NS.
Pathways, bridges and underpasses	After dark	Chi-square	$x^2 = 7.344$; df = 9; NS.
Green spaces	Day time	Chi-square	$x^2 = 6.192$; df = 9; NS.
Green spaces	After dark	Chi-square	$x^2 = 8.237$; df = 9; NS.

Table A16 Effect of education on respondents' choice of unsafe places in their local area, during the day time and after dark

Variable	Day time or after dark	Test used	Test result
Local facilities	Day time	Chi-square	$x^2 = 2.825$; df = 4; NS.
Local facilities	After dark	Chi-square	$x^2 = 1.153$; df = 4; NS.
Roads and motorways	Day time	Chi-square	$x^2 = 2.076$; df = 4; NS.
Roads and motorways	After dark	Chi-square	$x^2 = 4.013$; df = 4; NS.
Built up areas	Day time	Chi-square	$x^2 = 9.506$; df = 4; NS.
Built up areas	After dark	Chi-square	$x^2 = 2.304$; df = 4; NS.
Large built structures	Day time	Chi-square	No data.
Large built structures	After dark	Chi-square	$x^2 = 5.125$; df = 4; NS.
Pathways, bridges and underpasses	Day time	Chi-square	$x^2 = 1.101$; df = 4; NS.
Pathways, bridges and underpasses	After dark	Chi-square	$x^2 = 5.580$; df = 4; NS.
Green spaces	Day time	Chi-square	$x^2 = 2.138$; df = 4; NS.
Green spaces	After dark	Chi-square	$x^2 = 2.326$; df = 4; NS.

Children

Table A17 Effect of HCA, vegetation density, housing density and district on respondents' evaluation of the danger posed to children in the local area by "bullying"

Variable	Test used	Test result
HCA	Kruskal-Wallis	Chi-Square = 6.572; df = 8; NS.
Vegetation density	Spearman's correlation	r_s = -0.067; n = 194; NS.
Housing density	Spearman's correlation	r_s = -0.140; n = 194; NS.
District	Kruskal-Wallis	Chi-square = 2.406; df = 2; NS.

Table A18 Effect of HCA, vegetation density, housing density and district on respondents' evaluation of the danger posed to children in the local area by "abduction/assault"

Variable	Test used	Test result
HCA	Kruskal-Wallis	Chi-Square = 13.154; df = 8; NS.
Vegetation density	Spearman's correlation	r_s = 0.069; n = 192; NS.
Housing density	Spearman's correlation	r_s = 0.087; n = 192; NS.
District	Kruskal-Wallis	Chi-square = 5.286; df = 2; NS.

Table A19 Effect of gender on dependent variables related to children

Variable	Test used	Test result
Safety in home and garden	Mann-Whitney	z = -1.816; NS.
Safety in street	Mann-Whitney	z = -1.586; NS.
Safety in local area	Chi-square	x^2 = 0.991; df = 1; NS.
Roads and motorways	Chi-square	x^2 = 2.281; df = 1; NS.
Built up areas	Chi-square	x^2 = 0.000; df = 1; NS.
Pathways, bridges and underpasses	Chi-square	x^2 = 4.894; df = 1; NS.
Green spaces	Chi-square	x^2 = 0.067; df = 1; NS.
Abduction/assault	Mann-Whitney	z = -1.376; NS.
Traffic accident	Mann-Whitney	z = -0.995; NS.
Bullying	Mann-Whitney	z = -1.118; NS.
Drugs/alcohol	Mann-Whitney	z = -0.765; NS.
Gangs	Mann-Whitney	z = -1.296; NS.
Whether local area good for children	Chi-square	x^2 = 2.610; df = 1; NS.

Table A20 Effect of age on dependent variables related to children

Variable	Test used	Test result
Safety in street	Spearman's Correlation	r_s = -0.121; n = 240; NS.
Safety in local area	Mann-Whitney	z = -0.154; NS.
Local facilities	Mann-Whitney	z = -0.040; NS.
Roads and motorways	Mann-Whitney	z = -0.488; NS.
Built up areas	Mann-Whitney	z = -0.568; NS.
Pathways, bridges and underpasses	Mann-Whitney	z = -0.365; NS.
Green spaces	Mann-Whitney	z = -0.444; NS.
Abduction/assault	Spearman's Correlation	r_s = .010; n = 191; NS.
Traffic accident	Spearman's Correlation	r_s = -.019; n = 208; NS.
Bullying	Spearman's Correlation	r_s = -.085; n = 193; NS.
Gangs	Spearman's Correlation	r_s = .037; n = 200; NS.
Whether local area good for children	Mann-Whitney	z = -0.362; NS.

Table A21 Results of tests showing the effect of occupation on dependent variables related to children

Variable	Test used	Test result
Safety in street	Kruskal-Wallis	Chi-square = 13.696; df = 9; NS.
Safety in local area	Chi-square	x^2 = 15.575; df = 9; NS.
Local facilities	Chi-square	x^2 = 4.863; df = 9; NS.
Roads and motorways	Chi-square	x^2 = 7.817; df = 9; NS.
Built up areas	Chi-square	x^2 = 3.619; df = 9; NS.
Pathways, bridges and underpasses	Chi-square	x^2 = 10.384; df = 9; NS.
Green spaces	Chi-square	x^2 = 13.530; df = 9; NS.
Abduction/assault	Kruskal-Wallis	Chi-square = 8.850; df = 9; NS.
Traffic accident	Kruskal-Wallis	Chi-square = 10.212; df = 9; NS.
Bullying	Kruskal-Wallis	Chi-square = 11.895; df = 9; NS.
Drugs and alcohol	Kruskal-Wallis	Chi-square = 6.562; df = 9; NS.
Whether local area good for children	Chi-square	x^2 = 15.319; df = 9; p < NS.

Table A22 Results of tests showing the effect of education on dependent variables related to children

Variable	Test used	Test result
Safety in home and garden	Kruskal-Wallis	Chi-square = 4.371; df = 4; NS.
Safety in street	Kruskal-Wallis	Chi-square = 5.061; df = 4; NS.
Safety in local area	Chi-square	$x^2 = 1.039$; df = 4; NS.
Roads and motorways	Chi-square	$x^2 = 6.801$; df = 4; NS.
Built up areas	Chi-square	$x^2 = 1.651$; df = 4; NS.
Pathways, bridges and underpasses	Chi-square	$x^2 = 2.709$; df = 4; NS.
Abduction/assault	Kruskal-Wallis	Chi-square = 5.233; df = 4; NS.
Bullying	Kruskal-Wallis	Chi-square = 8.859; df = 4; NS.
Drugs and alcohol	Kruskal-Wallis	Chi-square = 9.120; df = 4; NS.
Gangs	Kruskal-Wallis	Chi-square = 6.230; df = 4; NS.
Whether local area good for children	Chi-square	$x^2 = 7.550$; df = 4; p < NS.

Table A23 Effect of the presence of children in the family on dependent variables related to children

Variable	Test used	Test result
Safety in home and garden	Mann-Whitney	z = -0.262; NS.
Safety in street	Mann-Whitney	z = -0.240; NS.
Safety in local area	Chi-square	$x^2 = 0.511$; df = 1; NS.
Local facilities	Chi-square	$x^2 = 1.235$; df = 1; NS.
Roads and motorways	Chi-square	$x^2 = 1.235$; df = 1; NS.
Built up areas	Chi-square	$x^2 = 0.032$; df = 1; NS.
Pathways, bridges and underpasses	Chi-square	$x^2 = 1.188$; df = 1; NS.
Green spaces	Chi-square	$x^2 = 0.000$; df = 1; NS.
Traffic accident	Mann-Whitney	z = -1.096; NS.
Bullying	Mann-Whitney	z = -1.336; NS.
Drugs and alcohol	Mann-Whitney	z = -0.581; NS.
Gangs	Mann-Whitney	z = -1.520; NS.
Whether local area good for children	Chi-square	$x^2 = 2.134$; df = 1; p < NS.