Lighting and pedestrian reassurance at night time

Steve FOTIOS, Jemima UNWIN
(University of Sheffield, UK)

ABSTRACT
This article presents the first findings of a novel experiment carried out to determine whether the presence of road lighting contributes to pedestrians' reassurance after dark, with the aim of recording their evaluation without placing emphasis on lighting. In 130 of the 210 locations discussed in interviews, road lighting was mentioned as a reason for the presence or absence of reassurance, a similar frequency to spatial features, less frequent than access to help, but more frequent than familiarity or the presence of threatening other people. These results suggest that road lighting can play an important role in improving reassurance. The method provides more confidence than previous studies because the effect of lighting was not enhanced by obvious changes of lighting.

Keywords : road lighting, pedestrians, reassurance

1. INTRODUCTION

This article discusses reassurance, an alleged benefit of road lighting for pedestrians, and thus the merit of an argument as to why a local authority may decide to install or improve road lighting. The results are presented of an experiment carried out to measure reassurance without emphasis on lighting or fear.

Reassurance is confidence when using a road and is used here as an alternative for the terms perceived safety and fear of crime that have been used in previous studies: Lighting that promotes reassurance means a higher level of perceived safety and a lower level of fear of crime. One reason for this new terminology is that fear of crime is an ill-defined term that could mean anything from vague concerns to immediate threat: if a participant is asked a question about *safety* or *fear of crime* it is difficult to identify to which type of fear they refer in their answer.[1)]

Past studies of lighting and reassurance have tended to survey residents before and after changes to road lighting in the local area. While several of these studies have suggested that lighting affects reassurance it is possible that fear of crime is exaggerated by the procedure with which it is measured.[2)] In those before-and-after studies that suggest an improvement in reassurance after a change in lighting it may be that participants are responding to the change itself rather than to a particular change in characteristics of the lighting. With before-and-after studies there is a possibility that public opinion may change due to external events, for example widespread reporting in the media of disorderly behaviour. One problem associated with the measurement of whether lighting effects fear of crime is that there are many ways in which fear of crime is manifest and it is often unclear what is actually being measured.[1)] Poor question wording, the desire to cooperate with surveys, and media and political interest in the fear of crime have contributed to a scenario in which fear is continually recreated both socially as a topic for debate and at the individual level: surveys in this situation may not merely measure fear, they may actually create and recreate it. The traditional methods consistently over-emphasise the levels and extent of fear of crime and can generate the impression of a large proportion of the population who fear crime.[1)]

In the UK, illuminance levels recommended for residential streets (2.0 - 15 lux) are higher than in some other countries, for example Australia and New Zealand, where the range is 0.5-7 lux and in Japan where the range is 3-5 lux on the horizontal plane.[3)] Higher illuminances imply higher energy consumption, and thus the current demand for reductions in energy consumption suggest investigation as to the basis for the higher UK illuminances. Hence the current study is investigating whether road lighting enhances pedestrian reassurance after dark, and is being carried out in parallel with studies investigating other pedestrian tasks.[4,5,6)]

2. DOES LIGHTING MATTER?

The first question is whether there is evidence that lighting does affect reassurance. Loewen et al[7)] used two procedures to examine perceived safety in urban environments. The first study sought spontaneous comments as to what features of an environment contributed to making them feel safe or dangerous, and this was done without reference to any real or simulated locations. Three environmental

features were mentioned most frequently, with light (either daylight or artificial light) being the most frequent (42 of the 55 test participants) followed by open space (30) and access to refuge (24). In the second study, test participants were presented with 16 images of outdoor scenes and asked to rate them using a 5-point response scale ranging from not at all safe (1) to very safe (5). These 16 images were two different scenes for the eight combinations of the three critical safety features found in the first study. The images were presented in a random order and each was observed for 30 seconds.

The results of the second study are shown in Figure 1. It can be seen that in all four situations regarding the presence or absence of open space and refuge that lighting increases mean ratings of perceived safety. The presence or absence of light had a larger effect on mean ratings than did the absence or presence of either open space or refuge. The presence of either light, open space or refuge in a scene lead to higher ratings of safety than when they were absent. However, Figure 1 suggests that lighting alone provides an approximately equal perception of safety than do open space and refuge together in the absence of light. It is of course possible that the presence or absence of light was the most obvious component of the images on which these judgements were made.

Note that Loewen et al used photographs of locations that were likely to be unfamiliar to their test participants, so their judgements may not represent precisely those made when in the actual location after dark. The method used in the current study attempted to overcome this.

Note also that it has been found that in some situations improved lighting may not aid reassurance[8]: what lighting can do is to allow you to see better, but if what this does is make graffiti, litter and loitering individuals more visible, then improved lighting will not alleviate the fear of crime.

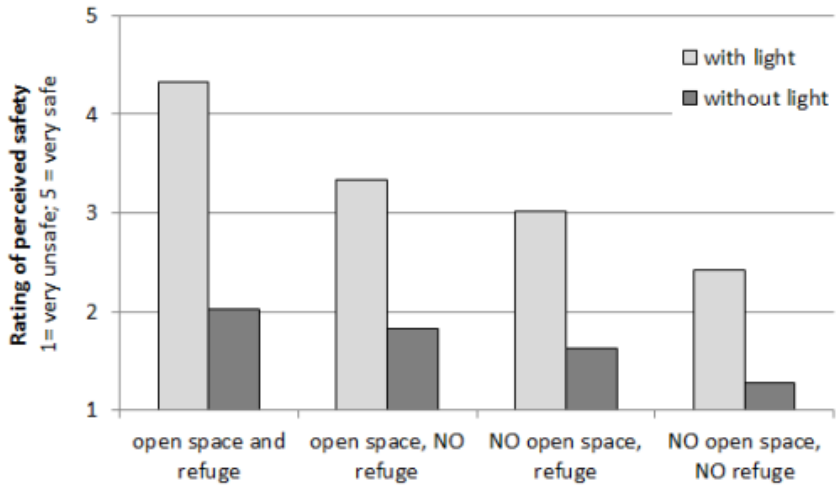

Figure 1. Mean ratings of perceived safety of images of outdoor scenes as reported by Loewen et al.[7]

3. METHOD

Test participants attended a three-stage interview during which different procedures were used to record their reasons for feelings of reassurance after dark in residential roads (Figure 2). This paper presents the results of the second stage.

Before attending the interview, participants were asked to photograph streets where they did, and did not, feel confident to walk alone at night-time. Examples of the photographs are shown in Figure 3. In the first stage of the interview participants were asked whether walking on the streets alone after dark generated any feelings in them. If so, they described their feelings and the reasons for these. If not, they instead described places where they do and do not walk and the reasons for this behaviour. In the second stage of the interview, using the same open method of questioning, participants were asked to describe the reasons for choosing the streets which they had photographed.

This approach was employed to avoid preconditioning with the notion that lighting might effect safety and to allow for discussion of environmental impacts beyond lighting in order to gauge the relative importance of lighting. Their photographs served as a

reminder of the places they had chosen rather than being the target scene. The order of discussion (reassured/not reassured) was counterbalanced.

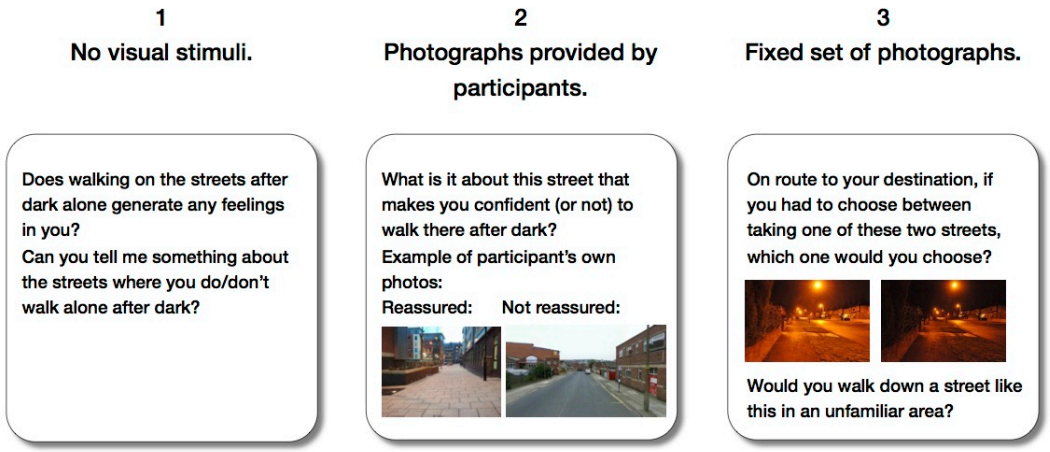

Figure 2. Three stage interview used to investigate reassurance.

Figure 3. Examples of participants' photographs. These were used as prompts during the interview.

Transcripts of the 53 interviews were analysed by identifying reasons given by participants for the presence or absence of feelings of reassurance, and these reasons were then counted. Reasons for reassurance were allocated into one of seven categories: presence of road lighting, access to help, spatial features, familiarity, mobility, presence of threatening others and presence of CCTV. Three were chosen to represent the factors contributing to reassurance identified in past work: access to help and light were noted by Loewen et al, [7] and spatial features includes environmental features linked to concealment, prospect and escape as identified by Fisher and Nasar.[9] Four additional categories were identified during analysis of the results: familiarity, presence of CCTV, ease of mobility and presence of threatening others.

4. RESULTS

The respondents use of both positive and negative language was included. For example, the statement *"(I) realized that it is not that light; it was really dark with just one street light ..*" indicates that insufficient road lighting contributed to the person not feeling reassured, while "*pretty well lit on both sides of the road*" indicates that road lighting contributed to a good level of reassurance. The frequencies by which these reasons were used to justify feelings of reassurance were used to interpret

their relative importance.
The results presented in Figure 4 show the distribution of reasons given for the presence or absence of reassurance. The total number of places identified in the interview process was 210 therefore the maximum number of times a categorised reason could be mentioned is 210 times. The results showed that for 130 places road lighting was mentioned as a reason for the presence or absence of reassurance.
This is a similar frequency to spatial features, less frequent than access to help, but more frequent than familiarity or the presence of threatening other people. Overall 46 (87%) of the 53 test participants mentioned street lighting as a reason for feeling reassured on two streets of their choice and 45 (85%) mentioned lack of adequate street lighting or darkness as a reason for not feeling reassured on two streets of their choice.
These results suggest that road lighting can play an important role in improving reassurance and provides more confidence that the effect of lighting was not enhanced by obvious changes of lighting in test images.

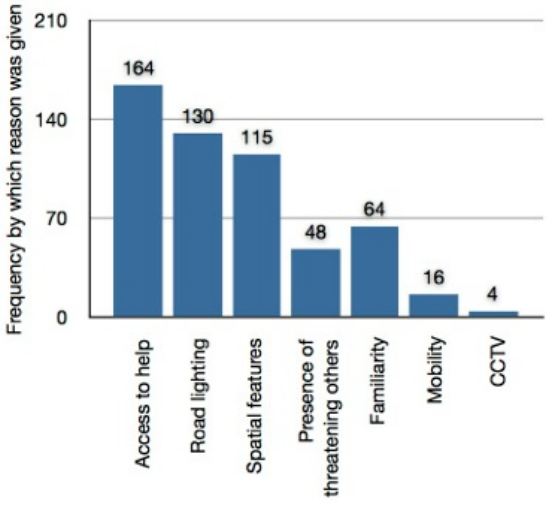

Figure 4. Test results: frequencies of reasons given for the presence or absence of reassurance.

5. CONCLUSION

A novel procedure was used to determine whether road lighting contributes to pedestrian reassurance after dark and this procedure aimed to avoid making the presence of road lighting an obvious factor. In interviews with 53 test participants road lighting was mentioned more frequently than most items, including the spatial features of prospect and concealment, except for access to help – the apparent presence of friendly people. These results confirm the conclusion drawn from Loewen et al that lighting contributes to reassurance.

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Steve FOTIOS
University of Sheffield, School of Architecture,
The Arts Tower, Western Bank,
Sheffield S10 2TN, UK
Phone: +44 114 222 0371
E-mail: steve.fotios@sheffield.ac.uk