The relationship between visual fields and perceived stress in a public transport hub

ABSTRACT

This paper investigates the relationship between visual fields and subjective ratings of perceived stress, which expresses how attractive a space in particular can be for users. The study was conducted at Luisenplatz, a major transport hub in a central area of the city of Darmstadt. The main research question is: How does the visual perception of the built environment influence perceived stress? The study investigated the impact of visual fields on perceived stress in the context of a public transport hub. The research hypothesis is that visibility correlates positively to perceived stress. Previous findings have revealed many open questions, in particular with respect to visual fields and stress perception. How do the chosen environmental and spatial parameters influence the perception of the built environment and its users’ behaviour?

Keywords

visual fields, public transport hub, perceived stress, spatial perception, configuration

1. INTRODUCTION

Emerging research spurs the discussion how visual field characteristics relate to emotions and behaviours. This study is built on the foundation of studies by Knöll et al. (2015, 2017) and Kühn et al. (2017). The research was conducted at Luisenplatz, a major transport hub in the city of Darmstadt. The main research question is: How does the visual perception of the built environment influence perceived stress? The study investigated the impact of visual fields on perceived stress in the context of a public transport hub. The research hypothesis is that visibility correlates positively to perceived stress. Previous findings have revealed many open questions, in particular with respect to visual fields and stress perception. How do the chosen environmental and spatial parameters influence the perception of the built environment and its users’ behaviour?

Hypothesis 1: Visibility correlates positively to perceived stress. The authors assume that high visibility, defined as the relative rate of the area that can be overseen from a given location in OPS, has a positive correlation to perceived stress.

Hypothesis 2: Vertices number is negatively related to perceived stress. In this study, the authors propose that low and high rates of visual complexity make stress perceived, while medium rates of visual complexity are negatively related to stress ratings in sub-areas that are low and highly exposed to train and bus traffic.

3. DATA SETS AND METHODS

A combination of Visibility Graph Analysis (VGA) and point isovist analysis was conducted. The latter was based on participants’ ratings of perceived stress. Both VGA and isovist contain awareness of mobile devices. The isovist shape of stress can be used to control traffic flow having a confined visual impact. The data shows that visibility has a weak negative relation to perceived stress, contrary to the assumption in hypothesis 1. The data endorses the statement in Knöll et al. (2017) that enclosure can be a further influencing factor to be taken into account when comparing different typologies of OPS.

5. DISCUSSION

The data shows that visibility has a weak negative relation to perceived stress, contrary to the assumption in hypothesis 1. The latter was based on participants’ ratings of perceived stress. Both VGA and isovist contain awareness of mobile devices. The isovist shape of stress can be used to control traffic flow having a confined visual impact. The data shows that visibility has a weak negative relation to perceived stress, contrary to the assumption in hypothesis 1. The data endorses the statement in Knöll et al. (2017) that enclosure can be a further influencing factor to be taken into account when comparing different typologies of OPS.

6. CONCLUSIONS

This study has provided user ratings about the Luisenplatz in order to explore how OPS users describe emotional appraisal of OPS, the areas users identify as maximum stressful, and to what extent space syntax measures correspond to user statements. This line of thought will have to be validated with bigger samples of OPS and in future cases of different rate and cultural context. This paper seeks to contribute a set of subjective spatial experience (data) which has been gathered as part of larger, extensive spatial perception and psychophysiological effects studies. The aim of the current study is to provide evidence of the relationship between visual fields and stress perception. How do the chosen environmental and spatial parameters influence the perception of the built environment and its users’ behaviour?

Acknowledgements

To Lakshya Pandit, who contributed to the illustrations.

References


