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Developing the urban blue: Comparative health responses to blue and green urban open spaces in Germany

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ABSTRACT

Recently, new perspectives upon healthy urban open spaces propose that open spaces can be regarded as urban green or blue spaces. However, there has so far been very little research into blue environments and their benefits for mental well-being. Our article focuses on the effects of water in cities, "urban blue" (as compared to "urban green"), on human health and well-being. To assess the mental well-being of visitors, we conducted qualitative semi-standardised interviews (n=113), asking which differences in well-being occur when visiting urban green and blue spaces in high-density areas of the inner city in Dusseldorf and Cologne, Germany. Although we found many similarities, some health-enhancing effects for users turned out to be prominent for urban blue in the four conceptual therapeutic landscape dimensions: experienced, symbolic, social and activity space. These effects include enhanced contemplation, emotional bonding, participation, and physical activity. The results suggest that urban blue as a health-promoting factor needs more detailed and accurate determination and examination of its general and local health-enhancing effects.

1. Introduction

The health and well-being of populations in cities face several challenges. A stressful, fast moving environment, an substantial degree of noise, unhealthy lifestyles such as low levels of physical activity, poor nutrition habits, the consumption of alcohol and tobacco, meeting the many requirements of family, job or society; all these reduce the health and well-being of urban dwellers (Galea and Vlahov, 2005). To meet these challenges, natural environments are increasingly being considered as key settings for health promotion in cities (De Vries et al., 2003; Frumkin, 2001). A distinct view of different urban open space types revealed the presence of a relatively unrecognised space in research and practice: urban blue space. Urban blue space comprises all surface waters within a city. The introduction of the term "blue" as a new colour, literally and metaphorically, to the debates on environmental health and therapeutic landscapes was considered to be a necessary step (Völker and Kistemann, 2011). Based on a study of two German cities on the River Rhine, this article is one of the first attempts to explore the urban blue in terms of health, adding to our understanding of how place shapes health, and seeks to extend and complement existing research on green space.

1.1. Health benefits of blue space – the current knowledge

Water is an element of extremes. Variability and sensitivity to environmental forms are characteristics of water. The polymorphic structure and metamorphic properties as well as their reversibility (Strang, 2004: 49) are individual qualities for people, and can affect health and well-being. Recent studies regarding blue space and health particularly are increasing, but still remain scarce. However, evidence underlining the health potential of blue space in relation to physical, psychological and social health, is increasing.

The relation of large-scale blue space in the shape of oceans to health was explored by Wheeler et al. (2012) and White et al. (2013a). In their quantitative approaches, both studies found associations between coastal living and good health. White et al. (2013a) used data from a nationally representative longitudinal survey of households in the UK (1991–2008). The results showed that self-reported health and well-being increased with lower distances to the coast. Using 2001 census data for England, Wheeler et al. (2012) showed that the health effects of coastal proximity was greater amongst more socio-economically deprived communities.

Water-related elements have been identified as playing an important role in the human-nature experience resulting in psychological benefits (Völker and Kistemann, 2011). Some evidence is emerging that blue space is among people's most preferred places for restoration and relaxation (Roe and Aspinall, 2012; White et al., 2013b).

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Foley (2011) chose more qualitative approaches to reveal the significance of the affective and performative nature of places symbolically and culturally linked with water (holy wells in Ireland). Using the therapeutic landscape concept, he stated that beliefs, meanings, experiences, narratives and embodiments affect health and well-being. However, he regarded therapeutic benefits to be negotiable and contingent, framed in a large extent by the symbolic meaning of a place. In a consequent study, he analysed the emergent relational geographies of the Roman–Irish Bath (Foley, 2014). The specific medical settings, identities and functions of these settings could be linked to social-healing pathways. The interrelation of physical and moral-symbolic "treatment" revealed a form of a post-structuralist therapeutic assemblage, which emphasises the mobile and complex production of therapeutic places.

Using a more sociological approach involving qualitative in-depth interviews, Ashbullby et al. (2013) focused on 15 families visiting the beach. In analysing the interviews regarding the health benefitting dimensions of physical, psychological and social health, they especially identified the social contact benefits for well-being as increasing with each of these visits.

Studies on urban blue space and health remain even scarcer. In many studies an explicit focus on urban blue areas is still neglected, and urban blue is merged with other urban open space types (urban green) or with blue space outside the cities. The current knowledge that can be depicted from recent studies suggests that urban blue space can protect health and promote health and well-being.

Testing the perception of ambient noise, studies found that urban blue elements such as rivers or fountains were effective natural sounds to mask road traffic noise (Jeon et al., 2010; You et al., 2010). In a recent study, Bert De Coensel et al. (2011) found that adding a fountain sound could reduce the perception of road traffic noise with low temporal variability. The soundscape pleasantness and eventfulness were enhanced, but not to the same extent, when bird sound was added. In a meta-analysis, Völker et al. (2013) showed that urban blue spaces can also mitigate temperature during daytime in the summer months. 27 studies comparing ambient air temperature of sites directly at the water and sites in a defined distance from the water showed that the median temperature decrease amounted to over 2 °C.

In an environmental psychology study using an experimental research design on water imagery in Amsterdam, The Netherlands, White et al. (2010), could associate higher preference, greater positive affect and higher perceived restorativeness for scenes with water than those without. Urban blue scenes were rated at least as positively as natural green space. In their study on canals in Phoenix, Arizona, Yabes et al. (1997) compiled several determinants for health and well-being experiences. They pointed out the aesthetic value, the function for social activities and the emotional bonding to the water when people were living near the canals. In an interdisciplinary study, Völker and Kistemann (2013) analysed salutogenic health processes at urban riverfronts using the therapeutic landscapes concept. The research areas were identified as spaces for improved physical activity, social interaction and recreation.

In a web-based questionnaire addressing adult residents of Oslo, Norway, Nordh et al. (2011) analysed preferences for different environmental components in small urban parks, such as grass, trees, flower beds or water features. They found that from the park alternatives, participants preferred the options with water rather than the ones without, but water played a minor role as a decorative component compared to other components such as lawns or trees. However, Nordh et al. focused on mirror ponds or small fountains as options, which represent small-scale urban blue, and thus might have only a low health-influencing capacity.

Non-urban blue biased studies showed that the presence of water can enhance the salutogenic effects (e.g. self-esteem, mood) of green space (Barton and Pretty, 2010; Korpela et al., 2010). Korpela et al. (2010) explored everyday favourite places in Helsinki and Tampere with 600,000 and 200,000 inhabitants, respectively, Finland. As a result, they regarded the means of restorative outcomes to be the largest in "exercise and activity/hobby areas", "extensively managed nature areas", and "waterside environments". The two latter categories both included blue space (river valleys/wetlands and beaches/harbour areas, respectively) and could not be distinctly separated from the presence of green space. Barton and Pretty (2010) found in their meta-analysis of ten UK studies that in their "green space typology" the "waterside" had the largest effects on self-esteem and total mood disturbance compared to, for example, "urban green". However, the typology "waterside" is defined as "e.g., beach or river" (Barton and Pretty, 2010: 3950), giving no hint about the presence of green space in these settings.

1.2. Conceptual framework

The conceptual framework of our article makes use of Gesler's concept of therapeutic landscapes to explore the relationship between health and place (Gesler, 1992). To assess salutogenic health processes in urban blue spaces, we use previously developed four dimensions of appropriation (Völker and Kistemann, 2011), to be analysed alongside four ontological dimensions in a two-dimensional matrix to create an applied enhancement of the therapeutic landscape concept (Figs. 1 and 2).

When human beings get in contact with a place, there are engagement processes which can be divided into different dimensions (experienced space, symbolic space, social space and activity space; Fig. 1). This engagement can potentially generate positive or negative health effects. Human beings interact not only materially but also mentally with physical aspects such as air, plants, water and scenery. This form of holistic perception (Gibson, 1979; Lévi-Strauss, 1973) is dependent on the socio-cultural and physical-spatial context (Strang, 2004). Sensory experiences, cognitive interpretations and meaning are in a relative inter-linked process (Schiffman, 2000: 21). The experienced space dimension implies a content-based enhancement, particularly concerning human sensory perception and aesthetic experiences.

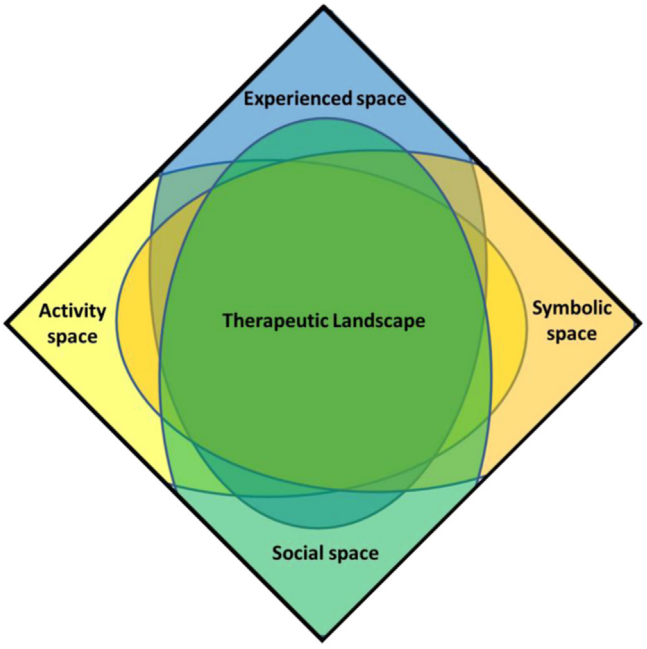

Fig. 1. Four dimensions of health-related appropriative processes occurring in a place (after Völker and Kistemann, 2011). All dimensions are not distinctly separated from each other, but can coincide, resulting in a therapeutic landscape.