



Environment preference and environment type congruence: Effects on perceived restoration potential and restoration outcomes



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ABSTRACT

The study aims were to replicate initial findings of an environmental preference/environment type “congruence effect” on judgements of perceived restoration potential (Wilkie and Stavridou, 2013. *Urban For. Urban Greening*, 12, 163) and explore if this congruence influenced restoration outcomes. University students ($N = 120$) categorized themselves as ‘country’ or ‘city’ persons to indicate environmental preference (nature, urban), viewed an imagery slideshow of one environment (nature, urban green space, urban street), and completed pre-post imagery measures of directed attention, mood, and fatigue. They also rated environments like those in the slideshow for perceived restoration potential and then completed a place identity measure in reference to their preferred environment. The use of the dichotomous environmental preference variable as an indicator of place identity was supported with equal, moderate-to-high levels of place identity reported by both groups. An environment type main effect indicated better positive/negative mood and fatigue outcomes for those in the nature condition compared to the urban street condition. Urban green space exposure resulted in a better improvement to negative mood compared to urban street exposure. Nature and urban green spaces provided equivalent changes in direct attention, mood, and fatigue. There was no environment type effect on directed attention or perceived restoration potential. The environmental preference/environment type congruence findings replicated the previously reported effect on perceived restoration potential (Wilkie and Stavridou, 2013. *Urban For. Urban Greening*, 12, 163). The highest ratings were after exposure to congruent nature environments and the lowest from exposure to urban street imagery incongruent with a nature preference. A pattern of both significant and non-significant results across outcomes indicated the congruence effect was more evident in those who preferred nature; urban preferences resulted in similar benefits outcomes across environments. These findings support growing evidence urban green spaces provide a range of benefits; and suggest person-place concepts such as place identity should also be considered in restoration research.

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Introduction

The link between the environment and our well-being is robustly established, with an emphasis placed on nature's benefits over urban locales (Bowler et al., 2010; Beute and de Kort, 2014; Beyer et al., 2014; Pasenen et al., 2014). Yet, even when encouraged to do so, people often do not use available nature resources in need of cognitive or emotional restoration (Eriksson and Nordlund, 2013; Herzog et al., 2002).

Wilkie and Stavridou (2013) proposed a possible explanation for this lack of engagement with nature in these circumstances.

They found the interaction between an individual's environmental preference, which they considered representative of place identity, and environment type influenced judgements of the potential for directed attention restoration to occur. Specifically, persons who preferred nature judged the restoration potential of incongruent urban locations lower than for nature settings congruent with their preference, while those with urban preferences perceived equivalent opportunities for restoration in both congruent urban and incongruent nature environments. Wilkie and Stavridou concluded the variations in perceived restoration potential due to this congruence effect may explain when nature locations are not always chosen when in need of restoration; and speculated persons with an urban preference do not seek nature because they perceive the city as restorative. This preliminary ‘congruence effect’ finding also reinforced the importance of considering individual-level

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person-place factors in studies of restorative environments (Smith et al., 2011; Jun et al., 2012).

The current study was a conceptual replication (Schmidt, 2009) of Wilkie and Stavridou (2013). The aims were to replicate the environmental preference/type congruence effect on judgements of perceived restoration potential and extend this research through three modifications: confirmation that environmental preference can represent place identity, introduction of an urban green space condition, and the addition of measures of restoration outcomes.

Environmental preference represents place identity

Typically environmental preference has been grounded in attention restoration theory (Kaplan, 1995). It is defined as liking an environment or finding it attractive (White and Gatersleben, 2011; Eriksson and Nordlund, 2013) and viewed as a consequence of directed attention fatigue (Herzog et al., 2002; Joye and van den Berg, 2011). Wilkie and Stavridou (2013) challenged this definition in two ways. They suggested environmental preference represented the individual's place identity, or the part of the self-concept inextricably linked to place (Proshansky et al., 1983); and that preference has a causal influence on environmental perception. However, environmental preference was operationally defined by asking participants to categorize themselves as a 'country or city person' without confirming if this categorization reflected place identity. Therefore, it was important to rectify this methodological concern in the current study.

More than nature OR built environments

Comparisons of nature vs. urban street environments have been criticized as an extreme dichotomy (Velarde et al., 2007); especially since studies indicate quite varied urban green spaces can positively influence restoration outcomes. Using the same validated measures as the current study, Tryväinen et al. (2014) compared participant's mood and perceived restoration potential judgements across three urban conditions: street, park, and forest. They found perceived restoration potential was highest for urban forests, followed by the urban park and city streets; and that both urban park and forest exposure resulted in equal improvements in positive mood. In another study using different mood and state-level restoration measures to the current study, three urban nature locations which varied in naturalness (urban parkland, tended and untended urban woodlands) provided equivalent benefits to mood and better than the least natural urban street setting (van den Berg et al., 2014). Both the criticisms of the nature/urban street dichotomy and the findings of these two studies suggest an urban green space condition would enhance the current study and naturalness should be incorporated into the research design.

Restoration as well as restoration potential

Wilkie and Stavridou (2013) presented preliminary evidence of an environmental preference/environment type "congruence effect" on perceptions of an environment as potentially restorative; but restoration outcomes associated with such environments were not measured. It is useful to understand how perception shapes the consideration of environmental resources, particularly given other factors such as priming (Stevens, 2014) and setting attitudes (Staats et al., 2003) can influence the expectation of restoration; but it is also necessary to determine if congruence also affects outcomes such as directed attention, mood, and fatigue previously associated with exposure to nature (e.g. Hartig et al., 1991; Berman et al., 2008; Tryväinen et al., 2014; van den Berg et al., 2014).

Study hypotheses

This study aims were to replicate the environmental preference/environment type congruence effect on perceived restoration potential and extend the study with the addition of an urban green space condition and restoration outcomes. It was also important to determine whether environmental preference represented place identity.

The following hypotheses were tested:

- H₁: Nature and urban environmental preference groups will report equal levels of place identification with their preferred location.
- H₂: Environment type will influence restoration outcomes and judgements of perceived restoration potential.
 - H_{2A}: Exposure to nature environments will result in the highest restoration outcomes/perceived restoration potential.
 - H_{2B}: Exposure to urban green spaces will result in similar outcomes/perceived restoration potential to nature.
 - H_{2C}: Exposure to urban street images will result in the worst restoration outcomes/perceived restoration potential.
- H₃: Environmental preference/environment type congruence influences restoration outcomes and perceived restoration potential.
 - H_{3A}: Exposure to congruent environments provides the highest outcomes/perceived restoration potential and incongruent ones the least.
 - H_{3B}: The congruence effect will be more evident in persons with a nature preference.

Method

Sample characteristics

University students received class credit for participation as part of a research engagement scheme in first and second year undergraduate research methods (N = 120; 74% female; M_{age} = 23.70, SD = 7.26). Participation was considered voluntary because students could choose from a large number of projects and/or complete written journal summaries to fulfil requirements.

Environmental preference

Participants were asked 'Do you consider yourself as a city person or a country person?' to capture environmental preference as a representation of their place identity. 'Country persons' were categorized as having a nature preference (n = 47) and the others an urban preference (n = 73). No other criteria were used to categorize environmental preference.

They also completed Drosletis and Vignoles' (2010) 7-item place identity scale. Sample items included 'This place reflects the type of person I am' and 'I feel this is the place where I fit.' Items were rated on a scale from 0 (*not at all true of this place*) to 10 (*completely true of this place*); and place identity was calculated as the mean of all items. Cronbach's alpha for the scale was .92 with this sample. This scale was chosen instead of the connectedness to nature scale (CNS, Mayer and Franz, 2004) or the environmental identity scale (EID, Clayton, 2003). The CNS shares some conceptual overlap with place identity (Perrin and Benassi, 2009); but is not grounded in social identity theory (Tam, 2013), which is integral to place identity theory (Drosletis and Vignoles, 2010). The EID, although based on a social identity framework, only focused on identification with nature settings and does not consider identification with other locations (i.e. cities). Therefore, Drosletis and Vignoles' measure was

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