Influence of environmental preference and environment type congruence on judgments of restoration potential

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A B S T R A C T

This study (N = 120) explored whether congruence between environmental preference and environment type influenced judgments of likelihood for directed attention restoration. The study differs from previous research by operationally defining preference as a representation of place identity from environmental psychology rather than as the attractiveness of the location. Preference was also treated as an influence on judgments of restoration potential instead of a consequence of directed attention fatigue. Persons experiencing images congruent with their environmental preference were expected to rate similar locations highest in restoration potential compared to incongruent images; however, this was not fully supported. Those with a nature preference perceived congruent environments as the most potentially restorative, but this was higher than, rather than equal to, the restoration expectations of those in the urban congruent condition. As expected, nature preferences influenced judgments of urban settings; this incongruence was rated least restorative. Persons with an urban preference perceived both nature and urban environments equal in restoration potential; this may explain circumstances when environment choice appears inconsistent to cognitive restoration goals. Water quality in the settings also influenced restoration judgments; pleasant waterscapes resulted in the best expectations. The findings illustrate the potential contribution of place identity from environmental psychology to the study of attention restoration outcomes and further support the growing literature endorsing the positive potential of urban settings.

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1 Introduction

Directed attention refers to 'attention that requires effort and is susceptible to fatigue' (Berto et al., 2010, p. 494). It is considered a necessary but exhaustible resource (Cohen and Spacapan, 1978; Driver, 2001); and depletion of directed attention stores results in diminished cognitive performance and executive control (Van der Linden et al., 2003; Berto, 2005; Kaplan and Berman, 2010). However, restoration of this attention capacity and recovery from directed attention fatigue (DAF) is well documented in natural environments, particularly in comparison to urban settings, with exposure to nature resulting in improved performance on a variety of cognitive tasks (e.g., Hartig et al., 1991; Berto, 2005; Berman et al., 2008). One theory used to understand natures' positive impact on directed attention is attention restoration theory (ART, Kaplan, 1995). According to ART, nature is superior to urban environments in the recovery from DAF because natural environments possess four specific characteristics which encourage involuntary attention: fascination, being away, extent or coherence (i.e., richness), and compatibility with restoration goals (Kaplan, 1995). In locations which possess these qualities, directed attention disengages while involuntary attention takes over, thus resulting in restoration of directed attention capacity.

Individuals, it seems, do anticipate nature's positive influence on directed attention, rating it higher for perceived likelihood of recovery from DAF (Herzog et al., 1997; Laumann et al., 2001; Hartig and Staats, 2006) and recommending it to others in times of stress (Grahn and Stigsdotter, 2003). Studies have also found nature was more preferred by those experiencing cognitive fatigue (Hartig and Staats, 2006) and a visit to a preferred place resulted in better restoration outcomes (van den Berg et al., 2003; Korpela and Ylén, 2009). Proponents of ART argue it is the need for directed attention restoration and the perceived likelihood for that restoration to occur in a particular location which creates a general preference for nature over urban environments (e.g., Laumann et al., 2001; Herzog et al., 2003; van den Berg et al., 2003; Hartig and Staats, 2006). This account implies the perceived likelihood for restoration is what drives a universal nature preference that subsequently results in choosing nature when seeking restoration from DAF. However, we believe there are two potential limitations with the implied causal link between perceived likelihood for restoration and environmental preference proposed by ART.
The first limitation is the assertion that environmental preference is primarily based on the need for directed attention restoration. This view is based on ART's evolutionary position that our preference for nature is because of its usefulness in terms of survival (Joye and van den Berg, 2011); and as a result, attention restoration theorists have treated environmental preference as a consequence of the perceived likelihood exposure to a nature environment would reduce attention fatigue and facilitate directed attention recovery (e.g., Calindo and Rodriguez, 2000; Herzog et al., 2003; Staats et al., 2003; Hartig and Staats, 2006; Martens et al., 2011). Yet the findings of several studies contradict the evolutionary cause and effect relationship between restoration judgments and preference suggested by ART. In some instances, scenes perceived as highly restorative were not necessarily those which were highly preferred (Peron et al., 2002); nor was restoration found to predict environmental preference (Han, 2010). Even more curiously, nature is not always chosen for restoration from DAF, even when perceived as the best option to achieve this goal (Herzog et al., 2002). Together, these findings raised a question about whether the type of environment, perceived likelihood for restoration, and environmental preference may interact in ways other than those predicted by ART when individuals make decisions on where to fulfill their attention restoration goals. This study explores one particular interaction, environment type and environmental preference, as an influence on perceived likelihood for restoration. Specifically, the study tests if the congruence between environment type and an individual's environmental preference which has an effect. In testing this relationship, an important distinction is made between our approach and that of attention restoration theorists because environmental preference was considered an antecedent influence on judgments of an environment's directed attention restoration potential.

A second limitation was related to the definition of environmental preference implemented in ART research. Even though early ART research considered environmental preference as a multi-dimensional construct (Kaplan, 1977), preference has been almost exclusively defined as either liking the environment or finding it attractive (Herzog, 1985; Herzog et al., 2003; van den Berg et al., 2003; Hartig and Staats, 2006; Han, 2010; White and Gatersleben, 2011). We found this definition too restrictive. Environmental preference is more than an aesthetic judgment of the environment; and we believe most preference studies using this definition do not consider the potential diversity of person–place relationships. One aspect of person–place relationships which is under-researched in attention restoration studies is place identity. In the present study, environmental preference is viewed as a characteristic of the individual's place identity (Lalli, 1992; Drostlets and Vignoles, 2010) or the 'dimensions of self that define the individual’s personal identity in relation to the physical environment...' (Proshansky, 1978, p. 155). Several studies support our belief that place identity may be relevant to environmental perceptions which could ultimately shape location choice when seeking directed attention restoration. For example, Kyle et al. (2004a, 2004b) found individuals with higher place identity associated with the Appalachian Trail in the U.S. perceived setting density and greater problems of overuse, crowding, and encroachment. Place attachment, a component of place identity (Lalli, 1992; Drostlets and Vignoles, 2010), also influenced location choice for recreation and stress recovery (Adevi and Grahn, 2011). In addition, people also develop bonds with places not typically considered restorative because people–place relationships are inextricably linked to the individual's identity, as well as a multitude of goals beyond cognitive restoration (Lalli, 1992; Drostlets and Vignoles, 2010; Scannell and Gifford, 2010); and it is these personal ties to particular location types which provide a basis for one's environmental preference (Kyle et al., 2004; Drostlets and Vignoles, 2010). Therefore, studies of attention restoration should explore if environmental preference defined in a manner which accounts for an environment-related identity processes effects perceived likelihood for restoration judgments and potentially location choice for these goals.

This research is also conducted as part of the growing challenge to the view of urban environments as non-restorative. Although there is little dispute that exposure to nature can have positive outcomes for cognition, mood, and mental health conditions such as depression (e.g., van den Berg et al., 2003; Berto, 2005; Berman et al., 2012); there is also evidence urban green environments can offer a range of similar benefits (Hernández and Hidalgo, 2005; Karmanov and Hamel, 2008; Martens et al., 2011). Further understanding location choices in situations of DAF may help to encourage engagement with places suited to both the individual's restoration goals, their place-identity related preferences, and maximize their restoration outcomes and enhance general well-being. Exploring the potential influence of environmental preference on decision-making in circumstances of DAF may also aid in overcoming negative expectations associated with places which are incongruent with the individual's environmental preference, for example in the case of persons' with strong nature identities who find themselves in urban settings which they consider to be non-restorative.

Study aim and hypotheses

To address two perceived limitations in the environmental preference research grounded in ART, the current research differed both in terms of the hypothesized direction of the relationship between environmental preference and perceived likelihood for restoration; and by the operational definition of environmental preference. Few directed attention restoration studies have operationally defined environmental preference as anything other than a general aesthetic rating of the environment; and, to our knowledge, none defined it as a representation of place identity. Nor have prior studies determined how environmental preference may potentially drive perceived likelihood for restoration judgments in situations of DAF. The aim is to explore whether congruence between environmental preference and environment type influenced views of restorative potential; and propose it is the interaction between these two variables which may explain the counter-intuitive behavior of an individual failing to choose nature even when aware it is generally the most suited to DAF recovery goals. The following hypotheses were tested:

- **H1**: The highest restoration potential ratings would be expected for images congruent with the preferred environment compared to incongruent ones.
- **H2**: A nature preference/urban environment incongruence would result in the lowest levels of perceived restoration potential.

Method

Sample characteristics

A predominantly female (80%) sample of students (N = 120) from a northeastern English university received class credit for participation. The mean age of the sample was 22.91 years (SD = 7.09). The study followed British Psychological Society (BPS) ethics guidelines (BPS, 2010) and was approved by the university ethics committee. Participants indicated if they considered themselves ‘a city person or a country person’ as a method of capturing environmental preference as a representation of their place identity. A similar urban/country person distinction has been used in place identity research (Knez, 2005). ‘Country persons’ were categorized as
having a nature preference \( (n = 48) \) and city persons as having an urban preference \( (n = 65) \).

**Experimental stimuli and materials**

As a control, water type (pleasant, unpleasant, no water) was manipulated in both environments resulting in six stimuli conditions (Fig. 1). Previously presence of water influenced both environmental preference ratings \( (i.e., \text{attractiveness}) \) and attention restoration outcomes \( \text{Laumann et al., 2001; White et al., 2010} \), while perceived water quality significantly influenced the perceived likelihood for restoration in coastal locations \( \text{Hipp and Ogunseitan, 2011} \). The pleasant water condition included imagery such as coastlines or well-maintained canals, whilst the unpleasant water condition included imagery of water features which were poorly maintained, with murky water, or established algae blooms. To increase ecological validity, images were chosen to be relatively familiar with some including people, modes of transportation, or physical structures.

The 12-item version of the Perceived Restoration Scale \( \text{SRPRS, Hartig et al., 1997} \) measured the extent to which exposure to environments similar to the stimuli were considered likely to result in directed attention restoration. Although other measures of the perceived likelihood for restoration exist \( \text{Laumann et al., 2001; Han, 2003; Hartig et al., 2003; Pals et al., 2009} \), the PRS has been widely used and has established reliability and validity information \( \text{e.g., Hartig et al., 1997; Han, 2003} \). The full scale contained 16 Likert items \( \{1 \text{ not at all to } 7 = \text{completely}\} \) representing four aspects of restorative places (Being Away, Fascination, Coherence/extent, Compatibility). Evidence indicated these items represent two factors, coherence and general restorativeness \( \text{Hartig et al., 1996, 1997} \). Only the 12 SRPRS items representing general restorativeness were used; and Cronbach’s alpha indicated these items had good internal consistency in the present study \( (0.81) \).

**Design and procedure**

The study implemented a quasi-experimental design consisting of a congruence independent variable with four levels. These levels were created based on environmental preference \( \text{nature/urban} \) and environment type \( \text{nature/urban} \). Two conditions were congruent: nature preference/nature imagery \( (n = 23) \) and urban preference/urban imagery \( (n = 30) \); and two were incongruent: nature preference/urban imagery \( (n = 25) \) and urban preference/nature imagery \( (n = 35) \). The dependent variable of perceived restoration potential was calculated as the mean of the SRPRS items.

After a study briefing and provision of consent to participate, students were randomly allocated to one of the six imagery conditions \( \text{Fig 1.} \) The 20-minute session took place during a normal university day in the second academic term. Others have used daily academic demands as an indicator of cognitive fatigue \( \text{e.g., Hartig and Staats, 2006; Karmanov and Hamel, 2008} \); therefore, it was expected the participants would be experiencing a similar level of DAF. They received course credit for participation but could choose from a large number of projects; therefore, participation was considered voluntary.

Participants viewed a slide show presented using E-prime. It consisted of 10 images specific to their experimental condition. Each image was presented for 15 s on a continuous loop lasting 7 min consistent with previous studies \( \text{van den Berg et al., 2003; Berto, 2005} \). Other studies have used slide shows effectively \( \text{Ulrich, 1979; Peron et al., 2002; Herzog et al., 2003; Staats et al., 2003; Berto, 2005; Hartig and Staats, 2006; Berman et al., 2008; Ryan et al., 2010} \), with little difference between real-world exposure, video or slide-shows of images \( \text{Hartig et al., 1997; Kellgren and Buhrkall, 2010} \). This method was chosen over actual environmental exposure to reduce participant burden during the winter months when data collection took place; and, because engagement with the environment would result in ratings of actual restoration instead of anticipated restoration likelihood. After exposure to the experimental stimuli, participants completed the demographic questions and were instructed to consider environments like those they had just viewed in the slide show when completing the SRPRS. Finally, all participants viewed a humorous video of a baby laughing to counteract any negative effects from viewing non-preferred environments or unpleasant water images.

**Results**

The analysis sample was reduced to 113 due to single item missing values and identification of one case as an outlier on the dependent variable. Data was analyzed using SPSS version 19.0. Prior to the main analysis, several checks for possible confounds were conducted. Restoration potential ratings did not differ by gender, \( r(112) = -0.05, p = 0.96; \) or by age, \( F(1, 109) = 2.12, p = 0.13 \). They also did not differ solely by environmental preference \( (r = 0.36, df = 111, p = 0.72) \); and indicates that both participants with a nature preference and those with an urban preference were equally able to perceive an environment’s for restoration potential.

**Effect of environment and water type**

The results of a \( 2 \times 3 \) (Environment \( \times \) Water Type) between-subjects ANOVA on restoration potential indicated a significant main effect of both environment \( (F(1, 109) = 17.23, p = 0.001, \eta^2_p = 0.14) \) and water type \( (F(1, 109) = 12.04, p = 0.001, \eta^2_p = 0.18) \). Nature environments were rated higher in potential for restoration \( (M = 5.78, SE = 0.13) \) than urban ones \( (M = 4.81, SE = 0.13) \). Post hoc analyses of the main effect of water type using bonferroni adjustment indicated the pleasant water condition was perceived as significantly more restorative \( (M = 5.76, SE = 0.16) \) than both the no water \( (M = 5.18, SE = 0.16, p = 0.03) \) and unpleasant water conditions \( (M = 4.64, SE = 0.16, p = 0.01) \); while presence of unpleasant water was rated lower than no water \( (p = 0.05) \). Effect sizes for the main effects were small to moderate \( \text{Ferguson, 2009} \). The interaction between environment and water type was not significant, \( F(1, 109) = 1.86, p = 0.16 \).

**Effect of environmental preference/environment type congruence**

The primary analysis of interest used a quasi-independent variable created based on the congruence between environmental preference and environmental type. A between-subjects \( 4 \times 3 \) (environmental preference/environment type congruence \( \times \) water type) ANOVA was conducted and post hoc comparisons used bonferroni adjustment. The interaction between the primary independent variable and water was non-significant \( (F(6, 101) = 0.72, p = 0.64) \). Fig. 2 illustrated the effect of environmental preference/environment type congruence on perceived restoration potential \( (F(3, 101) = 6.32, p = 0.001, \eta^2_p = 0.16) \). A nature preference/nature imagery congruence resulted in significantly higher perceived restoration potential ratings than an urban preference/urban imagery congruence \( (p = 0.02) \). The difference between the congruent nature preference/nature imagery and incongruent urban preference/nature imagery conditions was non-significant \( (p = 0.72) \). Essentially, exposure to nature images, irrespective of location, resulted in the highest expectations of restoration. Persons with an urban preference also viewed the congruent urban and incongruent nature images as equal in restorative potential \( (p = 0.63) \). There was, however, a difference in restoration potential ratings between incongruent preference/imagery conditions
Fig. 1. Examples of environmental stimuli. (A) Nature with pleasant water. (B) Nature with unpleasant water. (C) Nature with no water. (D) Urban with pleasant water. (E) Urban with unpleasant water. (F) Urban with no water.

\( p = 0.01 \); those in the nature preference/urban imagery condition provided the lowest perceived restoration ratings compared to the urban preference/nature imagery condition as predicted.

Discussion

The study aim was to explore if congruence between environmental preferences, defined here as a representation of place identity, and environment type influenced judgments of the environment’s restorative potential. Specifically, it was hypothesized the congruence between environmental preference and the type of environment influenced perceptions of the likelihood for recovery from directed attention fatigue (DAF). Congruent environments were expected to be perceived as most restorative, irrespective of whether they were nature or urban ones; and the incongruence between a nature preference/exposure to urban locations to result in the lowest ratings.

The expected effect of environmental preference/environment type congruence was only partially supported since congruence did not always result in higher perceived restoration potential. Those in the congruent nature preference/nature environment imagery condition anticipated the greatest likelihood for
restoration from similar locations; but this level was higher than the corresponding congruent urban condition contrary to the first hypothesis. Perceived likelihood for restoration ratings in the congruent nature condition also did not differ significantly from the incongruent nature condition, which was a mismatch between an urban preference and nature environment, thus indicating nature was considered the more restorative location generally. However, people exposed to images congruent to their urban preference perceived similar locations as equal in restoration potential to those with the same urban preference exposed to incongruent images of nature settings. As the second hypothesis predicted, the incongruence between a preference for nature and exposure to urban images resulted in the lowest perceived restoration potential ratings for similar urban locations.

Although not a specific study aim, the presence of water did impact judgments of restoration potential. Locations with pleasant waterscapes were considered potentially more restorative than ones containing negative imagery or those without water. In addition, there was a significant main effect of environment type. Nature settings were judged as being potentially more restorative than urban settings; however, it is important to note the urban settings which include images of both general urban vistas and urban green spaces were also rated as potentially restorative rather than non-restorative; but just not to the same extent as nature locations.

Two measurement issues also merit discussion. Our method of capturing environmental preference, considered to be representative of the individual’s place identity, differed from most studies focused on preference in the attention restoration theory (ART) literature. Some might criticize our operational definition of environmental preference because it was a forced choice option rather than rating the degree of preference using a Likert scale; but our dichotomous method of categorization has previously differentiated people amongst several place identity processes, particularly when associated with preference-congruent locations (Knez, 2005). Yet, we acknowledge there are still potential limitations with a forced-choice item as a measure of environmental preference more generally. Subsequent studies should confirm the choice between being a ‘country person’ or a ‘city person’ does measure environmental preference and that it represents place-related identity by establishing convergent validity with other identity measures. This may be accomplished by determining if city and country persons differ on existing measures of place identity (e.g., Drosetis and Vignoles, 2010) and in the level of emotional connection to with nature (e.g., Perrin and Benassi, 2009). Studies could also confirm these categorizations represent environmental preference by asking the respondent where they prefer to spend their time.

Another measurement issue relates to use of perceived likelihood for restoration using a Likert scale of general restorativeness (SRPRS, Hartig et al., 1996, 1997). This scale, although widely used, has been criticized for its inability to consistently represent the four aspects of restoration predicted by attention restoration theory (Laumann et al., 2001). Although a valid concern in studies testing the theoretical predictions of ART, we believe the measure was suited to the aim of the current study which was to test how preference and environment interacted to influence perceptions of an environment’s restoration potential. However, the perceived likelihood for restoration did rely on self-report ordinal data which is not without limitations. Since this study focused on subjective perceptions of an environment’s suitability for restoration, we believe

Methodological considerations

Several study limitations related to the sample, measurement, and general design which should be addressed. One methodological issue was that the sample was comprised of students and was primarily female in composition. The use of a quasi-independent variable for environmental preference also resulted in unequal sample sizes for this variable, with lower representation of those who preferred nature in the study. Together, these issues limit the generalizability of the findings.
ordinal data was the most suitable to the research aim. We do also recognize that anticipation of restoration is not the same as achieving recovery from DAF. Future studies should determine if differences of perceived likelihood for restoration translate into actual differences in restoration outcomes (e.g., improved directed attention capacity) in preferred environments.

The use of images rather than experience in the environment may be considered a weakness based on the argument that immersion within the environment, referred to extent in attention restoration theory (Kaplan, 1995), is important to successful restoration. We counter this concern in two ways. First, a number of studies indicated imagery can have similar restorative benefits (Berman et al., 2008; Berto et al., 2010; Kjellgren and Buhrkall, 2010) and simple visualization of an environment also had this effect (Ryan et al., 2010). We also felt that imagery was more appropriate to understanding judgments of restoration potential as an influence on making the decision about whether to engage with an environment or not. If the respondents had been immersed in nature or urban contexts, estimation of restoration potential and location choice become irrelevant since participants are in situ. Another critique relates to specific image content, which was not varied as in other studies (e.g., Herzog, 1985; Berto et al., 2010). Manipulation of qualities such as coherence or fascination would have introduced a further layer of complexity outside the scope of general preference; and images were selected which were likely to be encountered on a typical visit to the location to maximize ecological validity.

Other studies also controlled for time of the day and day of week of participation (Hartig and Staats, 2006; Martens et al., 2011); but unfortunately, this information was not recorded. However, random assignment to experimental conditions at varying times/days should have precluded this from being a confounding factor. Finally, this was an independent subjects design without baseline measures of DAF fatigue because such fatigue was presumed based on the participant situation. Participants were students who were mid-way into a second term going about their normal academic routines so should have been experiencing cognitive fatigue (Hartig and Staats, 2006) but this should be explicitly measured in future studies using a repeated measures design.

Environmental preference and environment type congruence as a compliment to attention restoration theory's account of environmental preference

This study originated from two perceived limitations of ART’s explanation of our environmental preference for nature in times of DAF. The first limitation related to the dominant view of attention restoration theorists that environmental preference is a functional, evolutionary response to nature; and preference results from the individual’s need for restoration of directed attention resources. The second limitation was that environmental preference has almost exclusively been defined as an aesthetic judgment of an environment. We acknowledge the considerable body of evidence to support both assertions; however, our concern was the preference/restoration literature rarely, if ever, considered individual factors beyond the experience of directed attention fatigue which may also contribute to judgments of these environments (and subsequent location choice). To counter these limitations, this study provided evidence environmental preference does influence judgments of restoration potential and that environmental preference may represent something more than ‘liking’ a location or finding it attractive.

The findings indicated that, in some cases, the congruence between environmental preference and type influenced judgments perceived likelihood for restoration from directed attention fatigue. This congruence was particularly important to nature lovers who anticipated the best restoration in nature and the least in urban settings, while those with an urban preference were able to see equivalent restoration potential in either type of environment. Additionally, nature was considered as the most likely location to result in cognitive restoration irrespective of preference. Overall, the results support earlier studies which found nature was perceived as more restorative than urban locations (Herzog et al., 1997; Laumann et al., 2001; Hartig and Staats, 2006); and with ART’s assertion that nature is superior in aid of the restoration goals (Kaplan, 1995; Berman et al., 2008). However, ART would also have predicted that everyone exposed to urban imagery would have lower expectation for restoration, which was not the case. Those with an urban place-related identity (i.e., city persons) viewed both urban and nature settings as equivalent in their ability to aid recovery from DAF; and, on average, urban locations were judged as being ‘rather’ likely to result in restoration instead of non-restorative which would be expected by ART. This suggests that the urban environment is perceived as possessing similar benefits to nature when urban environments are generally preferred; and supports Karmanov and Hamel’s (2008) findings that well-designed urban environments can rival nature for restoration outcomes.

The results also suggested environmental preference can be defined in terms of place identity; and preference defined in this way does have an effect on expectations for attention restoration. In doing so, the study outcomes supported ART’s premise of compatibility, or congruence between location and goal, as important to restoration (Kaplan, 1995; Scopelliti and Giluliani, 2004). This study indicated identity-compatible locations could also have an influence; and in some cases, locations incompatible with this preference may preclude restoration because people are less likely to see the environment’s restoration potential. This is likely a particular component of place identity known as place-congruent continuity (Knez, 2005; Drosteitis and Vignoles, 2010), which refers to the locations suitability to the individual’s beliefs. Identity-related compatibility could explain the curious choice of an environment inconsistent with restoration goals (Herzog et al., 2003). It may have been less-than-suitable location choices for restoration goals were actually based on reasoned decisions by persons with a strong urban-related place identity who anticipated the same benefit in their preferred urban setting. However, the preference/environment congruence explanation we proposed here for this restoration goal/location choice inconsistency is only speculative and should be tested in future studies. One way to do confirm this explanation would be to assess the relative importance of directed attention recovery goals compared to personal environmental preference when selecting locations for the recovery from DAF.

Applications for urban design

The information presented may be useful to those responsible for urban green space management or health initiatives in urban locations, particularly when presented with the challenge of a lack of uptake with local facilities. Korpiela and Ylén (2009) established favorite place prescriptions are beneficial to mood and cognitive restoration and the findings here illustrate a potential means for engaging those with a strong urban-related place identity with urban green spaces. Nishit and Zelenkis (2011) noted people underestimate nature’s benefit; it also appears persons with a nature preference may underestimate the benefit of urban environments. Therefore, programs could also be targeted to those with a strong nature-related identity but residing in urban settings to remind them of the equivalent restorative benefits to be found in their ‘non-preferred’ urban setting; and highlight to people with a nature preference that they should consider their own expectation of a lack
of restoration may be precluding positive outcomes in urban green spaces.

Another important finding relevant to the development of urban green spaces was the clear influence of varying water types on perceptions of restoration likelihood. White et al. (2010) speculated it is not simply the presence of water that has this influence. This study confirmed views of water sources which are neglected will detract from user perceptions. This could result in a lack of usage of the space more generally; therefore, it is important that such features are continually maintained.

Conclusion

Despite its limitations, this study contributed to the growing body of literature endorsing the potential benefits of urban environments for directed attention restoration (Hernández and Hidalgo, 2005; Sanesi et al., 2006; Karmanov and Hamel, 2008; Grahn and Stigsdotter, 2010; Stigsdotter and Grahn, 2011). Persons with an urban preference certainly perceived this benefit in the current study; and the findings supported earlier work which found urban and natural environments were equivalent for affective restoration (Karmanov and Hamel, 2008). By addressing two limitations of the attention restoration account of environmental preference, the study also provided an argument for a complimentary approach between the predominant evolutionary view of restorative environments (Joye and van den Berg, 2011) and one based in the person–place literature of environmental psychology. Exploration of the influences of place identity and concepts such place attachment and place dependence in conjunction with factors established in ART should provide further insight on location choice when selecting restoration from a number of life stressors. Finally, we hope the findings were informative for those involved with the design and management of urban green spaces and used to facilitate increased engagement with health initiatives in these locations.

References


