KEYWORDS
Virtual reality, mental restoration, wellness, virtual Leisure

INTRODUCTION
Since the 1990s, there has been increased blurring of work and non-work lives (particularly for high income earners), fuelled by technological development, increased global competition, the demand for increased productivity, longer working hours, split or night shifts, weekend work and casual employment (Golden, 2009; La Vallee et al., 2002; Roberts, 2007). The consequence has been negative impacts on well-being, life satisfaction and organisational commitment (Brough & O’Driscoll, 2005; O’Driscoll, Brough, & Biggs, 2007) to name a few. Mental health is of critical importance and recognized as a major global challenge to public health (Prince et al., 2007). As a large proportion of society spends significant amounts of time working, promoting restoration within the workplace is necessary, particularly given work responsibilities often require prolonged focused attention and may cause stress (Gilchrist, Brown, & Montarzino, 2015). For this reason, interventions are needed in the workplace to mitigate the impact of increasing work pressures on employee well-being and productivity.

This study explores the effectiveness of a short-term workplace intervention in the form of a Virtual Reality leisure experience in enhancing mental restoration and reducing mental fatigue among employees.

LITERATURE REVIEW
Attention Restoration Theory (Kaplan & Kaplan, 1989) has been widely used to explain not only how prolonged mental effort results in mental fatigue, but also how certain environments and experiences can facilitate restoration. Restoration is “the process of renewing, recovering, or re-establishing physical, psychological and social resources or capabilities diminished in ongoing efforts to meet adaptive demands” (Hartig, 2004, p.273). According to the theory, spending time in a restorative environment permits the mind to rest and recover because no effort is required to focus attention or inhibit distractions (Berto, 2005; Kaplan, 1995). Natural environments are among the most restorative (Berman, Jonides & Kaplan, 2008; Hartig, Mang & Evans, 1991; Herzog, Maguire & Nebe, 2003).

A significant amount of literature on restoration has focused on natural environments (typically green spaces) in contrast to urban environments. Some research has found that blue spaces (water) are particularly valuable in enhancing restoration (Karmanov & Hamel, 2008; Völker & Kistermann, 2011; White et al., 2010). We propose that if viewing nature for small amounts of time can rest directed attention and reduce attentional fatigue, it is plausible that viewing nature via a totally immersive Virtual Reality Leisure Experience could promote mental restoration. VR is discussed in the following section.

Virtual reality
Information and Communication Technologies (ICTs) are becoming increasingly mainstream and used in daily life (Tussyadiah, Jung & Dieck, 2018). Virtual Reality (VR) is one such technology. Guttentag (2010, p.638) defined VR quite broadly as “the use of a computer-generated 3D environment – called a ‘virtual environment’ (VE) – that one can navigate and possibly interact with, resulting in real-time simulation of one or more of the user’s five senses. ‘Navigate’ refers to the ability to move around and explore the VE, and ‘interact’ refers to the ability to select and manipulate objects within the VE”. VR has many applications for the tourism industry and is being used increasingly destination marketing, enhancing tourism related education experiences, accessibility and heritage preservation (Guttentag, 2010).

This study is interested in the ability of Virtual Reality leisure experiences to help restore mental well-being. A lab-based pre-post experimental design has been implemented to test the following hypotheses:

H1 A virtual marine leisure experience will enhance mental restoration in the workplace
H2 A virtual marine leisure experience will reduce mental fatigue in the workplace

METHOD
The data was collected via an experimental procedure that took place in our research laboratory during July 2018. Seventy-five participants completed a pre-test online questionnaire that gauged their current mental state via a series of items that measure mental restoration and mindfulness. They then participated in a 5-minute Virtual Reality Leisure Experience using Oculus Rift VR Goggles. The 5-minute VR footage enabled participants to virtually experience swimming with Dolphins. Participants then completed a post-test online questionnaire that contained the same instruments for mental restoration and mindfulness. Demographic data was collected as well as questions pertaining to when they last took leave, the number of hours worked per week, family status and income bracket. A control group (N=20) completed the post-test survey only to assure the researchers of the effectiveness of the intervention and control for any priming effect that may have taken place.

RESULTS
The results of the experiment found support for both Hypotheses 1 and 2 demonstrating that a Virtual experience using VR technology that immerses people into a natural environment can enhance mental restoration and reduce mental fatigue – the results of the paired samples T-Tests can be seen in Table 1 below.

Table 1: Paired samples test

<table>
<thead>
<tr>
<th></th>
<th>Paired differences</th>
<th></th>
<th>Std. error mean</th>
<th>95% confidence interval of the difference</th>
<th>t</th>
<th>df</th>
<th>Sig. (2-tailed)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>Mean</td>
<td>Std. deviation</td>
<td>Lower</td>
<td>Upper</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Pair 1</td>
<td>Restored – restored post</td>
<td>-7.3333</td>
<td>1.12806</td>
<td>-9.9288</td>
<td>-4.7379</td>
<td>5.630</td>
<td>74</td>
</tr>
<tr>
<td>Pair 2</td>
<td>Fatigued – fatigued post</td>
<td>1.12000</td>
<td>1.22246</td>
<td>.83874</td>
<td>1.40126</td>
<td>7.934</td>
<td>74</td>
</tr>
</tbody>
</table>

DISCUSSION AND CONCLUSION
The results of this study provide insight into the effectiveness of Virtual Reality in enhancing employees’ mental state at work. We have demonstrated that just five minutes of a virtual leisure experience can lead to increased concentration while enhancing the mental well-being of employees who are unable to take regular holidays or engage in regular restorative practices that involve lengthy time...
commitments. The results also offer support for the restorative power of natural environments, aligning with previous studies that have demonstrated the relationship between nature and mental well-being (see for example; Karmanov & Hamel, 2008; Volker & Kistermann, 2011; White et al., 2010). Additional results and their implications for knowledge and practice will be shared during the presentation at CAUTHE 2020.

REFERENCES


