

## Finding psychological restoration along the Belgian coast: spatial variation and the influence of the environment's physical constituents

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### Introduction

Living in a coastal area and spending time at the coast has been shown to benefit psychological health and wellbeing. However, the amount of psychological restoration may be highly location-specific, and may differ both between (e.g. beach vs. town) and within (e.g. different proximities to the waterline at the beach) coastal environments. Furthermore, it is still unknown how much the physical constituents of the environment influence the experienced psychological restoration. Therefore, this study aimed to quantify the inter- and intra-environment variation in the experienced psychological restoration along the Belgian coast, and to determine the influence of the physical constituents of the environment hereon.

### Methods

Ten coastal environments were identified represented by 52 pictures, in which beach environments were subdivided into five types. The pictures were rated by students (N=102, 18-30y, 83% female) in random order on a five-item perceived restorativeness scale (PRS). The type and relative proportion of the physical constituents of the environment were quantified by manually drawing polygons on the pictures, calculating their surface area, and classifying them hierarchically under natural/urban/people and lower-level constituents. The analyses included regression-based general linear mixed modelling, standardized for various individual and study-design-related covariates and random effects.

### Results

The PRS-scores varied gradually across the ten coastal environments: salt marshes > dunes > beaches > green parks > piers > historical sites > dikes > docks > recreational harbors > towns. Average PRS-scores differed up to 30% between very high and neutral, and no detrimental effects were detected. Furthermore, additional intra-environment variation occurred at the beach: the PRS was lower for 'in a beach bar' and 'between beach cabins' compared to 'on a breakwater'. Lastly, the PRS associated positively with the relative proportion of natural content (i.e. vegetation, sky, and natural underground) and negatively with the relative proportion of urban content (i.e. buildings, vehicles and hardened underground).

## Discussion and conclusion

The results of this study confirm that considerable inter- and intra-environment variation exists in the psychological restoration potential of the Belgian coast, and that the natural and urban components of coastal environments play a substantial role in this. As such, the current perspectives about the restorative potential of coastal environments are refined, and recommendations for future research and applications are proposed.

Keywords: Blue health; Coastal environments; Psychological restoration; Attention restoration theory; Stress-reduction theory