

THE PSYCHOLOGICAL BENEFITS OF 'FOREST BATHING' IN A MIXED LOW-ALTITUDE MOUNTAIN FOREST IN THE EASTERN ALPS IN ITALY: AN ECOSYSTEM SERVICES APPROACH

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Abstract

In the last decade, the Ecosystem Services (ES) approach has recognized the importance of natural resources for the purposes of human health and wellness. In the psychological research field, other studies have identified direct relationships between the practice of walking in the forest and reductions in an individual's level of anxiety. However, despite these advances, ecosystem services and psychological studies have often been conducted according to a strictly mono-disciplinary logic. The main objective of this interdisciplinary study is twofold: (1) to analyse the influence of a forest environment in conducting a short-duration meditation session from a psychological point of view; and (2) to evaluate the implications of this in relation to ES innovation and to Payment for Ecosystem Services (PES).

Twelve subjects (eight women and four men, with an average age of 36.67 and a range of +/- 13 years) gave their informed consent to participate in two meditation sessions carried out on Saturday 21st and Sunday 22nd October 2017, in a forest and an indoor environment, respectively. These informed subjects underwent a preliminary medical examination to ascertain a good general state of health, which was identified as being a requirement for admission to the experiment. Individual anxiety levels were determined using two parameters: "State" Anxiety (SA), related to an individual's state at the time of an event, and "Trait" Anxiety (TA), related to their personal characteristics. All the subjects compiled the State Trait Anxiety Inventory test, form Y (STAI-Y), for the measurement of their state anxiety and trait anxiety (minimum anxiety=20, to maximum anxiety=80) both before and after each of the two sessions, for a total of four tests performed for each subject participant. The outdoor activity lasted for 1:40', and consisted of a walk through the mixed (*Fraxinus Excelsior*, *Tilia Platyphyllos*, and *Carpinus Betulus*) forest path (with a length of 630 metres) in the locality of the Kot Waterfalls (at an altitude of 168 metres AMSL) in the Municipality of San Leonardo (UD), Region of Friuli Venezia Giulia, Italy. Indoor activities took place in the hall of a building specifically equipped for meditation activities in the city of Udine.

From a psychological point of view: State Anxiety Levels (SAL) decreased on average, both as a result of forest (*F*) meditation (SAL_F=28.92), and after indoor (*I*) meditation (SAL_I=31.08), compared to the average level of Trait Anxiety Level (TAL=45.92). Ten out of twelve subjects saw reductions in their state anxiety, both in the forest and the indoor environments. The SAL_I-SAL_F (*forest bathing based incremental benefit*) score was positive (+2.17; +6.97%). Moreover, the reduction in state anxiety was greater than the average for six of twelve subjects in the indoor environment, and eight of ten subjects in the forest environment.

From a psychological research point of view, future investigations could examine the effects obtained following a longer period of meditation activities, and with a larger sized sample group.

From the point of view of the ecosystem service innovation, an hour of meditation in the forest produce a greater added value than an hour of meditation in an internal environment. This study provides useful insights for the establishment of forest-based Payments for Ecosystem Services agricultural subsidies. Future researches could quantify the total economic value of those services, as well as income opportunities for forest owners, agribusinesses, and rural communities.

Keywords: Agribusiness, Agricultural subsidies, Anxiety, Forest therapy, Health ecosystem services.