

healing and nature

Anderson, C. L., et al. (2018). "Awe in nature heals: Evidence from military veterans, at-risk youth, and college students." *Emotion* **18**: 1195-1202. The power of nature to both heal and inspire awe has been noted by many great thinkers. However, no study has examined how the impact of nature on well-being and stress-related symptoms is explained by experiences of awe. In the present investigation, we examine this process in studies of extraordinary and everyday nature experiences. In Study 1, awe experienced by military veterans and youth from underserved communities while whitewater rafting, above and beyond all the other positive emotions measured, predicted changes in well-being and stress-related symptoms one week later. In Study 2, the nature experiences that undergraduate students had during their everyday lives led to more awe, which mediated the effect of nature experience on improvements in well-being. We discuss how accounting for people's emotional experiences during outdoors activities can increase our understanding of how nature impacts people's well-being.

Capaldi, C. A., et al. (2015). "Flourishing in nature: A review of the benefits of connecting with nature and its application as a wellbeing intervention." *Int J Wellbeing* **5**(4): 1-16. (Available in free full text) From the increasing number of people living in urban areas to the continued degradation of the natural environment, many of us appear to be physically and psychologically disconnected from nature. We consider the theoretical explanations and present evidence for why this state of affairs might result in suboptimal levels of hedonic and eudaimonic wellbeing by reviewing the large body of research on the mental health benefits of connecting with nature. The advantages of contact with nature as a potential wellbeing intervention are discussed, and examples of how this research is being applied to reconnect individuals to nature and improve wellbeing are given. We conclude by considering the limitations of, and proposing future directions for, research in this area. Overall, evidence suggests that connecting with nature is one path to flourishing in life.

Coombes, E., et al. (2010). "The relationship of physical activity and overweight to objectively measured green space accessibility and use." *Social Science & Medicine* **70**(6): 816-822. This study examines the association between objectively measured access to green space, frequency of green space use, physical activity, and the probability of being overweight or obese in the city of Bristol, England. Data from the 2005 Bristol Quality of Life in your Neighbourhood survey for 6821 adults were combined with a comprehensive GIS database of neighbourhood and green space characteristics. A range of green space accessibility measures were computed. Associations between accessibility and the odds of respondents achieving a recommended 30 min or more of moderate activity five times a week, or being overweight or obese, were examined using logistic regression. Results showed that the reported frequency of green space use declined with increasing distance. The study also found that respondents living closest to the type of green space classified as a Formal park were more likely to achieve the physical activity recommendation and less likely to be overweight or obese. The association with physical activity, but not with overweight or obesity, remained after adjustment for respondent characteristics, area deprivation, and a range of characteristics of the neighbourhood environment. The findings suggest that the provision of good access to green spaces in urban areas may help promote population physical activity.

Kettner, H., et al. (2019). "From egoism to ecoism: psychedelics increase nature relatedness in a state-mediated and context-dependent manner." *International Journal of Environmental Research and Public Health* **16**(24): 5147. (Available in free full text) (1) Background: There appears to be a growing disconnection between humans and their natural environments which has been linked to poor mental health and ecological destruction. Previous research suggests that individual levels of nature relatedness can be increased through the use of classical psychedelic compounds, although a causal link between psychedelic use and nature relatedness has not yet been established. (2) Methods: Using correlations and generalized linear mixed regression modelling, we investigated the association between psychedelic use and nature relatedness in a prospective online study. Individuals planning to use a psychedelic received questionnaires 2 weeks before (N = 654), plus one day, 2 weeks, 4 weeks, and 2 years after a psychedelic experience. (3) Results: The frequency of lifetime psychedelic use was positively correlated with nature relatedness at baseline. Nature relatedness was significantly increased 2 weeks, 4 weeks and 2 years after the psychedelic experience. This increase was positively correlated with concomitant increases in psychological well-being and was dependent on the extent of ego-dissolution and the perceived influence of natural surroundings during the acute psychedelic state. (4) Conclusions: The here presented evidence for a context- and state-dependent causal effect of psychedelic use on nature relatedness bears relevance for psychedelic treatment models in mental health and, in the face of the current ecological crisis, planetary health.

Marselle, M. R., et al. (2014). "Examining group walks in nature and multiple aspects of well-being: a large-scale study." *Ecopsychology* **6**(3): 134-147. (Free full text available) Purpose: Outdoor walking groups can facilitate interaction with nature, social interaction, and physical activity, yet little is known about their efficacy in promoting mental, emotional, and social well-being. National group walk programs are especially undervalued for these outcomes. The present study sought to identify the mental, emotional, and social well-being benefits from participating in group walks in nature. Design: Drawing on an evaluation of the Walking for Health program in England, a longitudinal study investigated the mental, emotional, and social well-being of individuals who did (Nature Group Walkers) and did not (Non-Group Walkers) attend group walks in nature. Both groups were statistically matched using propensity score matching (n=1,516). Between-group t tests and multiple regressions were performed to analyze the influence of nature-based group walks on depression, perceived stress, negative affect, positive affect, mental well-being, and social support. Findings: Group walks in nature were associated with significantly lower depression, perceived stress, and negative affect, as well as enhanced positive affect and mental well-being, both before and after controlling for covariates. There were no group

differences on social support. In addition, nature-based group walks appear to mitigate the effects of stressful life events on perceived stress and negative affect while synergizing with physical activity to improve positive affect and mental well-being. Originality/Value: The present study identifies the mental and emotional well-being benefits from participation in group walks in nature and offers useful information about the potential health contribution of national outdoor group walk programs.

Mensah, C. A., et al. (2016). "Enhancing quality of life through the lens of green spaces: A systematic review approach." *International Journal Of Wellbeing* **6**(1): 142-163. (Available in free full text) Improving citizens' quality of life is a stated priority of many governments in both the global north and south. However, efforts to achieve this often focus on socio-economic measures, with limited attention to the contributions of environmental variables such as green spaces. This paper sought to bridge this knowledge gap by tracing the linkages between green spaces and quality of life, and how these connections can inform policy development in order to assist governments to achieve positive outcomes for quality of life. The paper took a theoretical approach by utilising the systematic review method. In all, 452 publications were included in this review, and rigorous content analysis was employed to retrieve relevant data. Green spaces were found to provide various social, economic, and environmental benefits, which in turn improve physical, psychological, emotional, social, and material wellbeing of individuals and thus enhance quality of life. It is therefore strongly recommended that conservation of green spaces should be integrated into national health, environmental and socio-economic policies in order to promote effective utilisation of green spaces to enhance citizens' overall quality of life.

Nisbet, E. K. & J. M. Zelenski (2011). "Underestimating nearby nature." *Psychol Science*. Modern lifestyles disconnect people from nature, and this may have adverse consequences for the well-being of both humans and the environment. In two experiments, we found that although outdoor walks in nearby nature made participants much happier than indoor walks did, participants made affective forecasting errors, such that they systematically underestimated nature's hedonic benefit. The pleasant moods experienced on outdoor nature walks facilitated a subjective sense of connection with nature, a construct strongly linked with concern for the environment and environmentally sustainable behavior. To the extent that affective forecasts determine choices, our findings suggest that people fail to maximize their time in nearby nature and thus miss opportunities to increase their happiness and relatedness to nature. Our findings suggest a happy path to sustainability, whereby contact with nature fosters individual happiness and environmentally responsible behavior.

Passmore, H.-A. and M. D. Holder (2017). "Noticing nature: Individual and social benefits of a two-week intervention." *J Positive Psychology* **12**(6): 537-546. We examined the effects of a two-week nature-based well-being intervention. Undergraduates (N = 395) were randomly assigned to one of three conditions: nature, human-built or a business-as-usual control. Participants paid attention to how nature (or human-built objects, depending on assignment) in their everyday surroundings made them feel, photographed the objects/scenes that evoked emotion in them and provided a description of emotions evoked. Post-intervention levels of net positive affect, elevating experiences, a general sense of connectedness (to other people, to nature and to life as a whole) and prosocial orientation were significantly higher in the nature group compared to the human-built and control groups. Trait levels of nature connectedness and engagement with beauty did not moderate nature's beneficial impact on well-being. Qualitative findings revealed significant differences in the emotional themes evoked by nature vs. human-built objects/scenes. This research provides important empirical support for nature involvement as an effective positive psychology intervention.

Passmore, H.-A. and A. J. Howell (2014). "Nature involvement increases hedonic and eudaimonic well-being: A two-week experimental study." *Ecopsychology* **6**(3): 148-154.

(Free full text available) Given experimental evidence of enhancement of well-being as a result of brief exposure to nature, we sought to study the effect of ongoing nature involvement on well-being. Undergraduate participants (N=84) were randomly assigned to either a nature intervention condition or a control condition. Results indicated that, at the end of 2 weeks, net-positive affect and feelings of elevation were significantly higher, and meaning was marginally higher, in the nature intervention condition relative to the control condition. Self-concordant motivation was also higher for the nature condition, suggesting that the nature intervention was perceived as intrinsically pleasant. Levels of trait connectedness to nature did not moderate the impact of the nature intervention on well-being, suggesting that nature involvement is beneficial among a variety of individuals. High levels of nature involvement were voluntarily sustained throughout the 2 weeks of the study. For the most part, participants engaged in simple activities involving nature close to home, indicating that drastic life changes need not be made in order to improve positive functioning and feelings. This research provides important empirical groundwork for future research concerning daily nature involvement as an effective positive psychology intervention.

Ryan, R. M., et al. (2010). "Vitalizing effects of being outdoors and in nature." *Journal of Environmental Psychology* **30**(2): 159-168. Five studies utilizing survey, experimental, and diary methods assessed the effects of being outdoors on subjective vitality. In Study 1, we used a vignette method to examine whether being outdoors was associated with vitality, above and beyond the influences of physical activity and social interactions. Study 2 explored the effects of being outdoors on vitality through an experimental design contrasting indoor and outdoor walks. In Study 3, participants were exposed to photographic scenes of either nature or buildings. Results showed that only the nature scenes enhanced subjective vitality. Studies 4 and 5 used a diary methodology to examine within-person variations in subjective energy as a function of being outdoors, again controlling for physical and social activity. Being outdoors was associated with greater vitality, a relation that was mediated by the presence of natural elements. Limitations of these studies are discussed, as well as their implications for research on energy and vitalization.
