

Nature and outdoor places

2159 papers DIRECTLY exploring NDD and neuroscience
1500 clinical sciences
2000 exploring psychology

Attention-restoration theory (ART)

Definition Nature invokes involuntary attention modestly, allowing directed-attention mechanisms a chance to replenish (Kaplan, 1995).

We are subjected up to 11 million bits of info per second in cities and can process only 15-20 total **300 individuals** increased performance in cognitive tasks with short walk

Tools directed-attention mechanisms are restored by simple natural experiences walk, observation of natural systems, controls were walks or sitting in urban versus more natural systems
memory tests like backward-span test changing task tests to examine executive functions
rumination, anxiety

Implications Creative performance dramatically enhanced
Creativity requires diffuse attention and incubation
Stimulates curiosity and flexibility

Biophilia (BET)

Definition evolutionary history & connectedness generate an innate design to connect with nature Kellert & E.O. Wilson 1993 rationale -evolutionary drive to search for survival enhancing settings utilitarian, naturalistic, ecological, aesthetic, symbolic, humanistic, moralistic etc

8523 individuals reported higher levels of happiness and connection with nature

4,758 connection = higher eudaimonic wellbeing ie purpose and function

Tools scientific inquiry of nature, engaging with the senses, creating natural places, conservation, growing food, connecting with the wild
visual contact with nature
emotional support dogs
urban gardens
the lovebug effect with microbial biomediation - driver-passenger and health on autonomic nervous systems

Implications reduce stress, improve cognitive function, and enhance mood and creativity
performance - evidence that support physiological recovery, collectively terms healing

Stress-reduction therapy (SRT)

Definition Stress reduction theory (SRT) provides an explanation for the impact of nature experience on affect. This theory posits that natural environments have a restorative advantage over artificial environments due to the role that they played in our evolution as a species (Ulrich, 1979)

2356 individuals had reduced stress simply viewing nature

757 reported viewing nature scenes promoted recovery from social stressors

Tools viewing visual landscapes
higher levels of natural complexity ie in forests such as through vegetation can elicit greater benefits

Implications fear, anxiety, resting HR, respiration, anger and aggressions, sadness, attentiveness improve
moderates activation cognitively, ie attenuates cognitive arousal
facilitation emotional support for defocussed creative performance in the ideation phase

Environmental identity — labeling

Definition

urban nature including trees, water, and simple open spaces can provide an ‘escape’ and alternative self-applied labels particularly in children

liminal places in cities provide an opportunity to try on new labels, ie ecofriendly

Nature doesn’t judge you.

Tools time, space, lack of structure

Implications addressing nature deficit disorder and can directly influence mental health and general well-being

stronger sense of self

Visual complexity

Definition

Work from the SRT hypothesis suggest that relative more complex patterns generate higher benefits however evidence suggest tipping points in the complexity needed

104 individuals were scored more creatively when tested following viewing plants

144 individuals in setting with mystery scenes outdoors had better memory recognition in testing **443 individuals** tested with natural fractals and and preference and support the notion that natural forms of a fractals, ie in nature including symmetry and branching for instance, can induce alpha states that support wakeful attention via EEGs

Tools

Imagery, green walls, even manicured nature how low can you go - outside better than inside might be sufficient for performance enhancements

less simplicity and straight lines in places

Risky play

Definition Less structure, more permeable places and surfaces, and less rules generate higher cognitive returns **25,782 individuals** benefited from risky outdoor play in simple tests and happiness

318 benefited from ‘green exercise’

Tools More adventure, less lines

Implications Open places with less rules and less pre-determined function can provide novel and stimulating playgrounds at least for children - but perhaps adults too!

local urban spaces just as important as parks to **41,000 respondents globally**

reciprocity too connection = pro-environment in **13,237 people**