"Biophilia, if it exists, and I believe it exists, is the innately emotional affiliation of human beings to other living organisms." — Edward O. Wilson (1997, p. 31)

Outline

- Literature
- Benefits & Challenges Across Professions
- OT evidence
- Current use
- Incorporation into the OT process
  - #1 – Active vs. Passive
  - #2 – Engagement with 5 elements
  - #3 – Graded engagement
  - Guided exercise
  - Brainstorm incorporation ideas

What is Nature?

- Mirriam-Webster, Oxford, and Terry Hartig (2014)
- Bionic vs. Abletic

Nature

Humans

Outdoors
Nature connectedness (Howell, 2011)
   - Well-being and mindfulness
Nature connection (Bragg, 2013)
Ecopation (Simó Algado & Persson, 2013)
   - Opposed to “machine society”
Eco-social occupation (Townsend & Simó Algado, 2015)

Methodology:
- Appropriate research design
- Comparison/control groups
- Sample size
- Seasonal bias
- Thorough intervention description
- Assessment tools & outcome measures (O’Brien 2012)
- Reliability/validity
- Sampling duration
- Masked evaluators
- Coding methods/bias
- Quarantine of variable from “contamination”

Data Analysis:
- Appropriate statistical test
- Chi-square
- T-test
- MANOVA/MANCOVA
- Statistical to clinical significance

Trustworthiness
- 1. Credibility
- 2. Transferability
- 3. Dependability
- 4. Confirmability

Replication
- Treatment site
- Interventions and therapists are unique

Studied Benefits

Effects, put. mechanisms/elements:
- Pasanien (2014) Indoors, built environments, outdoors
- Lunar cycles
- Sunlight
- Circadian Rhythm
- Barefoot Earthing
- Glisky & Teplitz (2004)
- Oehman, Chiewler, & Brown (2015)
- Mental Health (Pearson, 2014)
- Public Health Promotion (Stevens, 2010)
- Shinrin-yoku Forest Baths (Li, 2010)

Healthy Skepticism

- Gatersleben & Andrews (2012) “When walking in nature is not restorative: The role of prospect and refuge”
- Andrews & Gatersleben (2010) Fear-evoking dangers of natural environments: social, physical, weather, animals, dark, falling branches, getting lost
OT Evidence

- Wagenfeld (2014) OT Interventions Survey
- Unruh (2000) In Life-threatening Illness Pediatrics
- Angela Hanscom (SI) / Timber Nook / Balanced and Barefoot Blog
- Sarah VanderLaan (2012) "Into the Wild" OT and Nature CAT
- Hasson (2014) Longitudinal
  - Adjustment disorder of stress-related disorders
  - No control group

New OT Domain?
- Levack (2003) "Adventure therapy In occupational therapy: Can we call it spiritual occupation?"

Core Questions
- How do outdoor elements contribute to health and healing?
- Is it necessary to understand the mechanism of action in order to utilize outdoor elements in therapy?
- What are the most effective ways to incorporate nature into therapy?

Nature-Based Intervention: Other Professions
- Annerstedt & Wahrborg (2011) Systematic Review of Nature-assisted therapies
  - Horticulture Therapy
  - Therapeutic Recreation (Ewert, McCormick, & Voight, 2001)
  - Green Exercise (Pretty, 2005)
  - Physical Therapy
  - Speech-Language Pathology (Lundgren, 2004)
  - Nursing, Health promotion (Hansen-Ketchum, 2009)
  - Environmental Psychology (Greenleaf, Bryan, & Pollack, 2014)
  - Hypnosis, Guided imagery techniques
- Ecotherapy (Buzzell & Chalquist, 2009)

Occasional Therapy in Pediatric Settings
- Pediatrics
  - Schools
    - Promoting Physical Activity (Dyment & Bell, 2008)
  - Web Resources:
    - Finland: Scandanavia
    - USA
  - At-risk youth (Feda, 2015)
  - Adolescent Coping (Russell, 2015)
  - Development and Access to Nature (Strife, 2009)
  - Play (Tandor, 2013)
  - Sensory Integration, Cedarsong Nature Camp
  - Physical Disability, Mount Hood Kiwanis Camp

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- Physical Disability, Mount Hood Kiwanis Camp
Occupational Therapy Settings

- Recovery (Lewis, 2013)
  - [http://www.addictionrecoveryguide.org/treatment/outdoor_therapy](http://www.addictionrecoveryguide.org/treatment/outdoor_therapy)
- Elders, $10 million outdoor rehab
- Homeless Hiking
  - [http://www.aphasianetwork.org/aphasia_camp.html](http://www.aphasianetwork.org/aphasia_camp.html)
- Green Care Services (Granderud, 2014)
- Outdoor Education (Pryor, 2005)
- Urban design and population health
- Stress reduction in Adolescents of Buffalo, NY (Feda et al., 2015)
- Protective factor for young people Huynh (2013)
- Executive functioning in early/middle childhood (Schutte, 2015)

Occupational Therapy in Mental Health

- Cooper Riis Healing Community, (Asheville, NC)
- Oregon State Hospital (Salem, OR)
  - [https://www.oregon.gov/oha/news/Pages/OSH%20patients%20find%20hope%20through%20nature-based%20therapy.aspx](https://www.oregon.gov/oha/news/Pages/OSH%20patients%20find%20hope%20through%20nature-based%20therapy.aspx)
- AntFarm (Sandy, OR)

Summary of the Literature

- Nature is all-inclusive
- Hard to isolate experiment variables
- Hard to measure outcomes
- Generally poor research designs & methods
- Many ways to engage
- Outdoor exposure is beneficial, even YCA
- Also triggering
- OT utilization of outdoor elements is effective

Evidence-Based Practice

- Serious Research
- Playful Intuition
- OT Process
- Billing
  - ICD-10, Ch K39: codes for various "exposure to nature"
  - No specific CPT code
- Proposed new OT domain: Outdoor elements support whole person
  - All 3 domains & all 3 client factors
  - Doing, Being, Belonging, Becoming
  - Mind, body, spirit
  - Biopsychosocial
- Treatment
  - Evaluation
    - Occupational Profile: Look for engagement with outdoor elements
    - Nature Relatedness Scale
  - Intervention
  - Outcomes
    - Need more standardized measures

Incorporating Outdoor Elements into Therapy

- There is no empirical, recommended way.
- Consider culture, genes/experience, personality, temperament, climate/environment, life stage needs, sex/gender
Incorporating #1 – Passive or Active

**Passive** = Therapy intervention surrounded by outdoor elements
- Hospital waiting room environment (Beukeboom, 2012) no plants, pictures, house plants = perceived stress reduction, room attractiveness, trust in hospital
- Alnarp Rehabilitation Garden (Halldorff, 2014)

**Active** = Engaging with outdoor elements
- Hiking (Mitten, 2016)
- Gardening (Wagenfeld, 2014)
- Hippotherapy/pet-assisted therapy
- Aquatherapy
- Sensory bins
- Adventure/Wilderness therapy / Outward Bound
- Nature sounds
- Green spaces
- Camp or Outdoor Education
- Designing facilities/terrains for engagement of nature through a window
- Holistic therapy (mind, human, body

Incorporating #2 – 5 Elements

- **Earth**
  - Soil
  - Rocks
  - Plants
- **Fire**
  - Campfire
  - Candles
  - Sunlight
- **Water**
  - Swimming
  - Sprinklers
  - Games
- **Air**
  - Breathwork
  - Wind
  - Dance
- **Ether**
  - Higher Power
  - Meditation
  - Energy

Does the client have consistent engagement with all 5?

Incorporating #3 – Graded Engagement

Russell (2013) Knowing, Perceiving, Interacting, Living in nature

**Most engagement**
- Wilderness/Adventure/trail building
- Lakes/streams/beaches
- Campfires
- State Parks
- City Parks
- Farm/livestock
- Horticulture/permaculture
- Swimming pool
- Nursery

**Least engagement**
- Garden
- Biome
- Contained plants/ pets
- Potting
- Simulation (rock walls, simulated campfire, indoor fountain)
- Sounds, art, pictures, themes, colors
- Mental imagery

Brainstorm
- Oregon: easy access, low risk
- Animal rescue groups and mobile zoos (birds, reptiles, bugs)
- Environmental orgs (think clean up, tree planting, trail building)
- Farm/animals
- Plant nurseries, tree planting
- Archaeology-based sensory interventions
- Hippotherapy
- Pet-assisted therapy

Summary

Human connection to outdoor elements is vital to health.
Outdoor elements are effectively utilized by occupational therapists and other healthcare professionals.
There is no universal best way to engage with outdoor elements.

Three frameworks:
- #1 – Passive v. Active engagement
- #2 – 5 Elements
- #3 – Graded engagement

Hands on
Thank you

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