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Inland Norway  
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## Keynote speakers

### **Simon Elsborg Nygaard**

#### **On the relation between environmentally sustainable living and subjective well-being**

Simon Elsborg Nygaard is a clinical psychologist and has a Ph.d in the psychological aspects of sustainability from the department of psychology and behavioural science at Aarhus University. The topic of his keynote will be the environmentally sustainable living and subjective well-being.

For many years, Simon has worked with the psychological aspects of social and environmental sustainability in relation to the UNs Sustainable Development Goals. He is author and co-author of many scientific papers on the subject. He currently works as a Postdoc at Aarhus BSS, and is also a consultant in psychology at The Green Tinktank CONCITO.



His main interests in research are:

- › Psychological aspects of social and environmental sustainability
- › Man and cultures in relation to social psychology
- › Man and cultures in relation to pedagogical psychology

### **Ashild Lappegard Hauge**

#### **Symbol aesthetics as an approach to influence well-being and environmental behavior.**

Ashild Lappegard Hauge has a PhD in environmental psychology from NTNU 2009.

She is currently working as an associate professor at the Department of Psychology at Inland Norway University of Applied Sciences, where she teaches environmental psychology and qualitative methodology.



Her main interests in research are:

- › The meaning of the physical environment for wellbeing and life quality, especially for vulnerable groups of people.
- › Decision processes for energy efficiency and climate adaptation.

## Per Espen Stoknes

### Climate Psychology and Climate Communication

Stoknes is a psychologist with a PhD in economics. He has also studied philosophy and sociology and has extensive experience as a lecturer. In addition to his broad education, Stoknes has practical knowledge and experience as an academic and foresight facilitator. Stoknes is also an author of several books.

Stoknes is the director of the Center for Green Growth at the Norwegian Business School, a TED Global speaker, co-founder of the clean-tech company GasPlas and several other environmental technology companies.



His main interests in research are:

- › Environmental and climate strategies.
- › Energy systems and economic psychology

## Birgitta Gatersleben

### Nature engagement pre-, during and post Covid-19

Birgitta Gatersleben is Reader in Environmental Psychology at the University of Surrey. She has been program leader of the MSc in Environmental Psychology since 2000, which is the only such program in the UK.

Much of her work is part of multidisciplinary, applied research programs and has many years of experience in working with local and national government, business and environmental NGO's such as Natural England, Wildlife Trusts and the Royal Horticultural Society.



Her main interests in research are:

- › Understanding how interactions with the physical environment affect human health and wellbeing.
- › She is particularly interested in examining the relationship between environmental sustainability and human wellbeing and how interaction with the natural world can promote health and wellbeing.

## The role of emotions for the relationship of nature connectedness and subjective well-being

Evi Petersen

University of South-Eastern Norway

Empirical studies are increasingly documenting that experiences in nature predict improvements in health and well-being outcomes. At the same time, recent research has shown that positive emotions are linked to a sense of nature connectedness. As part of my PhD project, I am investigating the relationship between nature connectedness, subjective well-being and social relational emotions.

Based on two preliminary studies, the following hypotheses have been tested:

1. First, nature experience is associated with higher self-experienced states of nature connectedness and subjective well-being across cultures.
2. Second, social relational emotions (awe and being moved) experienced during nature experience are related to higher self-experienced states of nature connectedness and subjective well-being.
3. Third, social relational emotions (awe and being moved) mediate the effect of nature connectedness on subjective well-being.

The survey-based data was collected among participants from Norwegian, German and New Zealand (N = 153), who were joining one of eight outdoor field trips (4-11 days long) in 2018-20. Nature-connectedness was measured through a composite variable: The Connection to Nature Scale (CNS) and the Inclusion of Nature in Self Scale (INS); Subjective well-being was assessed by using a composite variable, consisting of positive affect (PA), negative affect (NA) and cognitive evaluations of one's life satisfaction (LS). As for the social relational emotions, being moved was measured with the KAMMUS-Two scale and awe as a single item. Preliminary results indicate a significant positive relationship between social relational emotions and a) sense of nature connectedness and b) sense of subjective well-being. Moreover, social relational emotions showed to mediate the positive effect of nature connectedness on subjective well-being to some degree.

Although this work is in its early stage, the overall interpretation of the findings suggests that nature connectedness may be partly enabled through social relational emotions like being moved and awe, due to the emotions' abilities to connect the self to other human beings, animals, imagined collectives or even nature.

*Keywords:* Nature connectedness, well-being, emotions, kama muta, awe

# The cosy space: an interplay of psychology and architecture

**Evgenia Gorantonaki**

Sintef Community

**David Uzzell**

University of Surrey

"Cosy" is a word often used by the general public as well as architects and designers, but when asked to define its qualities, it is a difficult concept to unpack in terms of its specific design attributes. We sought to explore the meaning of cosiness and its characteristics such that an articulated understanding of its characteristics might aid the design process. The research took place in an academic library at the University of Surrey, UK. The original part of the library has a traditional arrangement while a more recent addition (2010) offers more variety. The more recent design is a response to changing models of student learning and the role of libraries in universities.

We chose a phenomenological research approach because cosiness implies a user-environment interaction rather than an appraisal of the environment by the user. Interviews and sorting procedures were used (a free-sort and a Q-sort) in which postgraduate students categorised photographs of different spaces. These were then analysed using multidimensional scaling (MDS). Our results draw upon thematic analysis for the interviews and a neighbourhood interpretation for the MDS.

We found that cosiness reveals the need for a balance between aesthetic appeal, physical and emotional comfort, and warm atmosphere. We will describe in more detail the individual properties of the environment which contribute to feelings of cosiness and non-cosiness. The study also revealed two types of users, the social and the solitary.

We argue that cosiness enhances the quality of users' experience, encourages the use of these learning environments and supports their longer-term sustainability as usable places full of life.

*Keywords:* academic library, learning environment, sorting procedure, multi-dimensional scaling, spatial experience

## Developing the therapeutic potential of nature cabins in outpatient and inpatient care

**Svein Åge K. Johnsen, Åshild L. Hauge**

Inland Norway University of Applied Sciences

**Maren Ø. Lindheim**

Oslo University Hospital

The outdoor care retreat is a cabin outside Oslo university hospital. The purpose of the cabin is to offer a place of respite for patients and employees. In addition, there is a potential for a novel and innovative therapeutic environment. We are in the process of developing therapeutic interventions in nature cabins by integrating environmental psychology and clinical psychology and will present theoretical perspectives on how this environment (the cabin and its surroundings) may be used actively to support therapeutic processes. Examples include the use of metaphors and narratives, use of nature for emotion regulation and place attachment. We discuss the intention and rationale for developing the cabin, and present examples from practice on how the cabin is used in therapy in conjunction with the theoretical perspectives.

# Understanding the Role of the Natural Environment in the Lives of New England Island Residents

**Nicole Kras**

Stella and Charles Guttman College

While the multiple benefits of natural environments on individual's lives have been well noted, one population that is scarcely studied in current literature are adults who live on islands in the Northeast region of the United States. To begin this inquiry, the researcher sent an electronic invitation to participate in the study to eighty publicly available email addresses listed on government or organization websites on one of three researcher selected islands. Utilizing a modified snowball sampling approach, potential participants were also asked for their assistance in forwarding the request to potential subjects who met the study criteria. The researcher designed questionnaire included: open-ended questions on how the natural environment influences various aspects of the participants' lives, Likert scale questions on their perceived level of nature relatedness and how often they spend time in nature, and concluded with demographic questions. Open-ended responses were analyzed through multi-step thematic analysis supported by peer debriefing. This exploratory study used participant questionnaire responses (N=51) to gain insight into how island residents believe the natural environment influences their lives. Residents identified benefits and challenges of being isolated on an island, expressed feelings of gratitude for living there, and shared concerns about the environment (as related to the island). Findings also showed that the natural environment plays an essential role in these individuals' social, emotional, and physical health. Main themes that emerged from these responses were the natural environment (1) is the primary setting for physical exercise, (2) possesses therapeutic qualities, (3) improves mental health, and (4) supports a spiritual or reflective practice. Participants also believed that their levels of nature relatedness were mainly influenced by their childhood experiences, leisure activities, and lifestyle choices. These findings suggest that the natural environment plays a significantly vital role in the lives of New England island residents, providing an initial step in closing the gap in the literature on this population and providing direction for further inquiry into this area of study.

## Cultivating public spaces: urban gardening and quality of life – an interview study

**Katinka Horgen Evensen, Vebjørn Stafseng,**

**Anna Marie Nicolaysen, Beata Sirowy**

Norwegian University of Life Sciences NMBU

**Background:** Urban gardening, involving cultivating fruits and vegetables in an urban context, has become a popular activity the recent years, and its potential health benefits have been studied. However, most research on urban gardening has been on semi-private community gardens or urban farms. In the research project “Cultivating public spaces” (BYFORSK) we are interested in urban gardening activity in public space. The overall aim of the project is to explore how public urban gardening can enhance the quality of life in a compact city, and how urban gardening can be systematically integrated in urban public spaces in without excluding other users. **Objective:** The objective of this study was to explore how existing public urban gardening initiatives in Oslo influence the quality of life among its users. **Method:** We conducted 41 interviews with members of six urban public gardening initiatives in Oslo during autumn 2019. The initiatives selected were located in public accessible spaces within densification areas that offered collective gardening activities. The informants were recruited during events and interviewed on-site. The interviews focused on the activities that the gardens offered the users and their influence on the users’ everyday life. The collected material was analyzed using the Capability approach (Nussbaum, 2011). **Results:** The results from the study will be presented and discussed from an environmental psychology and public health perspective.

*Keywords:* public green space, quality of life, people-nature interaction, connectedness to nature

# Moving in with strangers – exploring motivations and stated preferences for co-housing and shared living in Norway

Dana Kvietkute

Inland Norway University of Applied Sciences

In the context of the increasing urbanization, rising housing prices, shrinking living space and loneliness epidemics, co-housing has emerged as a sustainable alternative for urban development. However, despite increasing body of research on the benefits of shared living and public policy makers' enthusiasm, co-housing does not appear to be in high demand among general population in Norway. According to Statistics Norway, in 2019, 50% of the population lived in detached houses and 95% lived in single family homes, making co-housing schemes a de facto niche housing commodity. In order to comprehend how municipalities could facilitate proliferation of co-housing schemes in urban municipalities, we need to understand what motivates Norwegians who are interested in shared living today and what preferences do they have. This study conducted 10 semi-structured interviews with potential residents in Bopilot co-housing project in Bergen. Data was analysed using thematic analysis. Participants indicated that both social and pragmatic aspects of expected mutual assistance were dominant factors in their interest in the co-housing project. Environmental concerns with emphasis on the culture of consumerism ranked second in the motivational hierarchy, but were prevalent across the sample. Furthermore, in line with the classic housing decision making theories, participants in this study reported that life course events (downsizing for empty nesters, first apartment for young professionals) have a pivotal influence on their mobility outcome. Findings of this study could be used as an evidence-based tool for facilitating future development of co-housing projects.

*Keywords:* co-housing, motivation, qualitative

# The Impact of Voluntary Parking Racks on E-scooter Users' Parking Behaviour

Katrine Karlsen, Espen Johnsson, Dr. Aslak Fyhri

Institute of Transport Economics

Since their sudden arrival, e-scooters have been celebrated and hated. One of the biggest points of contention is their ability to be parked wherever. While users value the flexibility of starting and stopping a trip anywhere, e-scooters are sometimes parked in ways that make them a source of frustration or even a physical barrier for other road users.

In June, several parking racks designed by VOI were placed in St. Hanshaugen in Oslo as part of a pilot experiment. We received three months of GPS-data from VOI and placed video cameras at four locations (two test and two control) to get a closer look at parking behaviour of users renting from both VOI and other e-scooter companies. In addition, survey interviews were conducted in the field before ( $n = 295$ ) and after ( $n = 275$ ), interviewing both non-users and users about e-scooter parking.

Preliminary results show that the parking of VOI-scooters becomes more concentrated after racks are placed, and that e-scooters converge around the parking racks. Video analyses show that while VOI-scooters are often placed in the parking racks, this is not the case for e-scooters from other companies. This illustrates that parking racks can improve e-scooter parking, but also that designated e-scooter parking places should be neutral or shared, i.e. not specific to one company.

The survey reveals differences between non-users and users in their perceptions of e-scooters and e-scooter parking, and in how positive they are to various suggested parking measures. While both non-users and users are positive to designated parking places for e-scooters, they differ in their opinion on the effectiveness of the parking racks and whether parking in racks should be mandatory.

*Keywords:* E-scooter parking, parking racks, users and non-users, voluntary parking measures

### **Taking real steps in virtual nature – Developing and testing a virtual green exercise installation: rationale and protocol.**

**Giovanna Calogiuri**

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Inland Norway University of Applied Sciences

**Sigbjørn Litleskare, Amelia Haile, Svein Åge Kjøs Johnsen,**

**Ole Einar Flaten, Fred Fröhlich**

Inland Norway University of Applied Sciences

Immersive Virtual Nature has emerged as a promising tool within clinical as well as health-promotion settings. Combining this technology with physical activity (e.g., walking on a treadmill), thus creating installations for so-called *virtual green exercise* (VGE), might extend its application to new contexts, such as physical rehabilitation and physical activity promotion, as well as help advancing green exercise research. Unfortunately, developing VGE installations with high restorative value is not an easy task, and challenges such as cyber-sickness may negatively influence the users' experience. The purpose of the *GreenVR* project is to i) develop a highly immersive VGE installation and compare two innovative techniques to create VGE settings; and ii) investigate the extent to which VGE can provide psychological, physiological, and behavioural benefits. The VGE installation consisted of a manually driven treadmill connected to a high performance computer and VR-system. One VGE setting was developed as a 360° video, while the other was created as a 3D digital model. Both VGE settings reproduced the same natural environment –a walking path by the river Glomma in Elverum (Norway). A single-blind RCT (ISRCTN ID: 14275608) was designed, with 60 healthy adult volunteers being randomly allocated to one of three conditions: treatment-1 (VGE exposure via 360° video), treatment-2 (VGE exposure via 3D model), control (walking on treadmill without VGE exposure). In each condition, the participants first viewed a brief video-clip designed to elicit negative emotions. Assessment was conducted at three time-points: Baseline (i.e., before the negative emotions elicitation), Pre-exposure (i.e., before the treatment/control), and Post-exposure (i.e., at completion of the treatment/control). Measurements included: presence, cyber sickness, perceived restorativeness of the virtual environments, perceived exertion, blood pressure, heart rate, enjoyment, affect, nature connectedness, and future green exercise intention. Additionally, qualitative information was collected through open-ended questions and by conducting in-depth interviews with a sub-set of participants. The study was approved by the Regional Committees for Medical and Health Research Ethics (REC ID: 134663). We will present the VGE installation as well as preliminary findings.

*Keywords:* green exercise, virtual reality, physical activity promotion, nature exposure.

# “Here, you step outside and you’re into nature.” A mixed-method study on the physical activity habits of first-generation Italian immigrants in Norway

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Inland Norway University of Applied Sciences

**Laura Terragni**

Oslo Metropolitan University

**Background:** Physical activity (PA) is an important lifestyle factor influencing people’ health and well-being. As PA is largely shaped by people’s living environment, when people migrate to a different country drastic changes may occur in their PA habits. The purpose of this study was to investigate PA behaviour among first-generation Italian immigrants in Norway (a group that over the past 15 years has triplicated in size) and the extent to which they perceived that the physical and sociocultural environment in Norway influenced their PA habits.

**Methods:** The data were retrieved from the study *Mens Sana in Corpore Sano*, which included a cross-sectional survey (n= 321) and a set of in-depth interviews (n= 14) conducted among first-generation Italian immigrants living in Norway (age ≥ 18 years).

**Results:** Most of the respondents were sufficiently physically active, with 62% spending ≥150 min/week in moderate-to-vigorous intensity PA and 66% engaging in some PA three times/week or more. The most popular activities among the Italians were ‘active transport’ and ‘green exercise’. 54% of the Italians perceived that moving to Norway had a positive impact on their PA habits, as opposed to only 16% perceiving a negative impact –the remaining 30% reported no perceived impact. From the qualitative analysis, it emerged that accessibility to natural environments and Norway’s social norm that value outdoor recreations were important elements boosting the Italians’ PA habits, as well as their health directly. Several reported having started new outdoors activities.

**Conclusions:** The relatively high PA levels of the Italians in Norway might contribute buffering other health challenges associated with the migration and settlement process, such as adjusting to new dietary habits and establish new social networks. Furthermore, these findings corroborates the importance of natural environments as a factor supporting and promoting an active lifestyle in the population.

### What do people believe will be the most important impacts of climate change in Norway?

**Thea Gregersen, Rouven Doran**

University of Bergen

**Gisela Böhm**

University of Bergen

Innland Norway University of Applied Sciences

**Hans-Rüdiger Pfister**

Leuphana University Lüneburg, Germany

A core aspect of people's mental models about global environmental risks, such as climate change, are beliefs about causes and consequences. This presentation provides preliminary findings regarding what Norwegian residents believe will be the most important impacts of climate change on their country.

A representative sample of the population was asked to answer the open-ended question "Climate change may affect different countries in different ways. What do you think will be the most important effect of climate change on Norway?". Böhm and Pfister (2001) proposed that the mentally represented causal structure of global risks can be described by five successive levels: (1) attitudes and goals, (2) human activities, (3) emissions and pollution, (4) environmental changes, and (5) consequences for humans. The open responses were coded according to this framework.

Preliminary results show that most of the responses (86%) mentioned environmental changes (Level 4), such as changes in weather patterns, natural disasters, or impacts on animals and plants. The second most frequent category (13%) encompassed impacts on humans (Level 5), including negative consequences on health, agriculture, and the economy. Very few answers (0.5%) mentioned factors related to attitudes and goals (Level 1), while 9% mentioned actions or activities (Level 2) and 6% emissions and pollution (Level 3). About 3% of the answers reflected beliefs that there will hardly be any impacts of climate change on Norway.

The type of causes and consequences that people primarily associate with climate change, and their corresponding placement in the causal chain, might influence experienced levels of worry, preferred mitigation solutions, and perceived responsibility. Consequently, our findings can contribute to better understand which policies Norwegian residents are willing to support and which climate change communications they are likely to accept.

*Keywords:* mental models, causal beliefs, climate change, mental representation

# Communicated and perceived public consensus about climate change

**Erik Løhre**

Handelshøyskolen BI

**Alf Børre Kanten**

Bjørknes høyskole

Although the scientific consensus about climate change is close to 100%, public consensus lags behind. Nevertheless, even in a relatively climate skeptical country such as the USA, a majority of the public agrees that climate change is happening and is due to emissions of greenhouse gases.

The current experiment investigated whether different ways of communicating public opinion about climate change could influence the perceived level of agreement. An online sample of US-residents ( $n = 164$ ) received information about what percentage of the US population reported different opinions about climate change, and were asked about their perceived level of (dis)agreement about these topics. The information was presented either in a “packed” way (e.g., “87% somewhat or strongly support research into renewable energy sources, while 13% strongly or somewhat oppose”) or in an “unpacked” way (percentages for each response option presented separately).

While we found no effect of the experimental manipulation, we found that perceived agreement correlates with participants’ own opinion about climate change ( $r = .342$ ,  $p < .001$ ). This indicates a form of false consensus, such that those who are least concerned about climate change and least in favor of policies to reduce climate change, perceive the disagreement about these topics to be the highest.

*Keywords:* climate change, communication, public consensus, false consensus, motivated reasoning

# **Climate change versus pandemic influenza: Do people perceive these two global risks differently?**

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With the coronavirus pandemic, the world faces a global risk issue many describe as unexpected and unprecedented. Many scholars compare pandemic coronavirus with climate change—the focus of much risk research in the past decades—to inform risk management. As yet, however, these comparisons have been mostly speculative, since an empirical basis for them was lacking. This paper presents comparative empirical data on risk perceptions of pandemic influenzas and climate change.

Adapting methods from the psychometric paradigm in risk research, we administered a survey with 12 psychometric scales to an international sample (N = 664) of students from six countries: Austria, Bangladesh, Finland, Germany, Norway, and the USA. The students evaluated two risk issues, climate change and pandemic influenza, on the psychometric scales. Principal component analyses of responses on these scales allow us to map the structure of students' risk perceptions of the two risk issues. In accordance with prior research we find that there are structural similarities in how people think about different risk issues. Four dimensions of perceived risk emerged for both climate change and pandemic influenza: the two classic dimensions dread and known risk plus moral responsibility and benefits. Differences between the two risk issues exist mainly with respect to moral concerns, which are evoked more strongly by climate change than by pandemic influenza.

The results have implications for risk communication and specifically for the question of whether risk perceptions of climate change and pandemic influenzas resemble each other sufficiently to justify the current practice of many scholars to use knowledge about climate change to inform risk management of the coronavirus pandemic. Moral concerns in particular deserve attention as a feature where the two risk issues diverge and thus may require different approaches.

*Keywords:* Risk perception, climate change, COVID-19, pandemic influenza, psychometric paradigm

# The influence of Covid-19 induced “non-commuting” on mood and productivity

**Aslak Fyhri, Katrine Karlsen, Alice Ciccone**

Institute of Transport Economics, Oslo Norway

The idea behind the survey is to investigate if commuting, by providing a natural pause and change of scenes between home and worklife, has a positive influence on well-being, focus and sense of vitality. The Covid-19 lockdown of society was used as a natural experiment.

Via Facebook and other communication channels, 2033 participants were recruited in May 2020 to take part in a longitudinal survey. They were then invited to complete follow up surveys every second week (six in total). The surveys asked about work situation, travel mode, travel mode satisfaction, mood and experienced productivity. By following the same individuals over time in a situation where travel decisions to a large extent are outside of their own control, we are able have a certain level of causal control on the relationships.

Initial analysis reveals that 17 percent of participants commuted to work at baseline, rising to 31 percent at T3 (late May) and 48 percent at T5 (early September). Around half of the participants working from home, missed their commute. There were large transport mode differences, with pedestrians and cyclists missing it most, and car drivers missing it least. The first wave of data showed that there was no difference between commuters and non-commuters in well-being or experienced productivity.

A more thorough analysis, also including the final wave of data will be conducted in time for the conference presentation, and will aim to look at intra-individual changes over time, to try to explain the somewhat unexpected initial findings. A SEM-analysis will be conducted in order to outline the pathways by which daily commute can influence the outcome variables.

*Keywords:* Active mobility; mood; travel mode satisfaction; survey; SEM-analysis

## Living environmentally childfree: Is it a private or an activist pro-environmental behavior?

**Erik Nakkerud**

University of Oslo

Choosing not to have children is a decision with very high environmental impact. Approaching pro-environmental behaviors in this way has nonetheless been criticized for only focusing on private, individual action. The aim of the present article is to see whether living environmentally childfree should indeed be categorized as an example of private-sphere environmentalism, or if it has aspects of environmental activism. This question is explored through analyzing interviews with 20 participants who have restricted reproduction based on environmental concerns. The analysis shows that living environmentally childfree has central aspects of both private-sphere environmentalism and environmental activism, suggesting an interaction of different types of environmental significance. Implications for the study of pro-environmental behaviors are discussed, especially regarding the need to go beyond the immediate, individual level when assessing the environmental impact of behaviors.

*Keywords:* pro-environmental behaviors; childfree; environmental activism; environmental impact.

## **“Less food waste with the right plate color?”**

**Kai Victor Hansen**

University of Stavanger

**Lukasz Derdowski**

The Norwegian School of Hotel Management, University of Stavanger

The problem of unsustainable food consumption among vulnerable residents of nursing homes who suffer from dementia is often multifaceted. From an individual perspective, people with dementia who do not finish their meals are likely to encounter serious health issues associated with malnutrition. Moreover, at the institutional level, nursing homes generate tons of nonrecoverable food waste each year, impairing not only their economic position but also the natural and social environment at large. The purpose of this study is to explore the possibility of reducing food waste in Norwegian nursing homes by appraising how large this reduction could be as one replaces traditional dining white porcelain with plates with diverse color combinations.

A quasi-experimental method was adopted. The results of the pilot study were extrapolated to the annual amount of food wasted at the national level.

The findings indicate that, on average, 26% of food was thrown away when served on white plates compared to only 9% when served on one of the colored plate options tested. Nationally, approximately 992.6 tons of food per year could potentially be saved with only a single change, ultimately ameliorating the unsustainable food consumption problem among residents of nursing homes.

*Keywords:* food waste, sustainability, nursing home, plate colors, pilot study

# The National School Championship: From climate Strike to Climate Action.

**Samar Albarghouthi**

Researcher and educational developer in Ducky AS, Trondheim

Achieving public engagement around climate issues is difficult, and traditional one-way communication is recognised to be ineffective for altering individual behaviour. Rather, it is recognised in the literature that successful alteration of climate behaviour requires a set of approaches which act together. These important best practices involve interactivity and engagement, and include data collection, feedback, peer group challenges, and community-based approaches. Ducky AS is a social entrepreneurship which contributes to climate action through a gamified behaviour change program which lets organisations and individuals track and reduce their carbon emissions footprint. This type of interactive, highly involving campaign has proved to deliver real substantive action and change in large populations. The programs utilise leading academic research in nudge psychology, climate communication, and sophisticated climate data. Our toolset is designed to empower individuals to change their attitudes, knowledge, and climate behaviours.

In this presentation, I will present a case study about the National School Climate Championship 2020, where we invited students from 51 high schools across Norway to reduce their climate emissions using our gamified web-app. More than 11,000 students, teachers, and principals competed in the campaign to:

- Engage and empower youth to reduce climate emissions and adopt climate friendly lifestyles.
- Increase awareness of sustainability issues and build knowledge.
- Build a culture around sustainability using playfulness and competitiveness.
- Understand the micro-macro levels of climate change and climate action.

The school climate championship reached a participation rate of more than 50%, and delivered thousands of kilograms of genuine carbon emission reductions in just two short weeks. The climate championship proved that mass mobilization for climate action is truly possible when climate communication is made more personal, concrete, social, and positive.

*Keywords:* Climate championship, climate action, carbon emissions, Norwegian high schools.

# Scientific Program: Pro-environmental Behavior – Theory Development

## Towards a sustainable psychology

**Hildegunn Marie Tønnessen Seip**

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How can psychological models better integrate updated knowledge about connections with nature and our ecosystems that sustain life? And what are the contributions of psychology towards building sustainable communities and societies, in line with the Sustainable Development Goals (SDGs)? These are the broad and overarching questions that guide the beginning of a research project on sustainability and psychology, still in the making.

In this session, the author will present the context of the sustainability development goals and their global and local impact, and discuss their connections with current psychological theory and practice. An updated eco-ecological model of human development and wellbeing (Seip, 2020), based on Bronfenbrenner (1979; 2000) will be outlined, along with its contemporary relevance. With this as a starting point, ideas for a local community research project in Southern Norway involving Participatory Action Research (Kidd & Kral, 2005) will be presented and discussed.

Rather than starting from the “inside out”, as mainstream psychology tends to do, when seeking to understand the individual human in their context – what happens if we start from the “outside in”, from the foundations of life in our ecosystem, closing in on individual humans in our communities and everyday settings?

Questioning and turning our perspective around may help us move towards a more sustainable psychology for today’s ecological crisis.

*Keywords:* Sustainability, community psychology, eco-ecological model, Sustainable Development Goals, participatory action research

# Reuse of building materials – networking strategies for social innovation

**Marin K. Henriksen, Ingeborg Flagstad,  
Åshild L. Hauge, Svein Åge Kjøs Johnsen**  
Inland Norway University of Applied Sciences

Social innovation to promote a sustainable societal development is crucial to reduce emissions produced by the construction industry. This project is part of a larger NFR-project led by SINTEF. The main aim is to develop a knowledge platform that will enable a faster implementation of reusable building products for societal transition to a circular built environment. At present, there is lack of expertise regarding reuse of building products in a Norwegian context, especially regarding how to ensure documentation on reused products that has a certain technical standard and implement this circular strategy in practice. There are many different stakeholders with different needs and practices; therefore, more focus on user perspectives is essential.

The research questions will be answered with a mix of qualitative and quantitative research methodology. A survey has been distributed to companies in the Norwegian construction industry to map underlying barriers and drivers for reuse of building materials. One entrepreneurial firm will be invited to participate in a multilevel network led by Oslo municipality. Interviews will be conducted before and after networks to evaluate whether network has improved, among other things, norms regarding reuse.

This project is in a start-up phase and data is currently being collected. We anticipate that norms will influence intentions to reuse building products and propose that the Norm Activation Model (NAM) could illustrate this association. Moreover, NAM could be extended to include social norms, measured as co-worker's organisational green climate perceptions. We anticipate that networks are a boundary space for cross-level interactions between different stakeholders; therefore, networks might be a good strategy to implement reuse of materials in practice. The data will give more insight into if, how and why network influence social norms, and whether this contributes to reduce other practical and societal barriers for reuse of materials.

*Keywords:* Environmental psychology, Reuse, Network, Norms

## Going green – what does it mean?

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There is a wide variety of concepts that describe “going green” in the context of organizational change. The creative construction of concepts demonstrates the dynamic nature of this field, but is also a product of the lack of clearly established research traditions. Although the concepts that are used in this field describe slightly different shades of green, there is also considerable overlap. The plurality of concepts has ensued a fragmented literature. Furthermore, because of the lack of overarching theoretical paradigms and lack of common definitions, relevant connections and comparisons may be overlooked. The concepts may be divided into two main categories; those that describe work green behaviour at the level of the individual and those that describe work green behaviour at the level of the organization. The field of greening organizations is highly value laden, and the implicit values of going green will be discussed. Greening is related to deeply founded values such as connection to nature, and asking questions about the environment evoke people’s moral emotions. This presentation will explore how green change in organizations may be operationalized, and trusting green data will be discussed in relation to social desirability.

*Keywords: Organizational greening, going green, concepts, organizational change, environmental psychology*

### **Emotional reactions to climate change and associated coping strategies: a grounded theory study on graduate students of sustainability-related programmes**

**Uladzislau Zubkevich**

Uppsala University

Climate change is happening. Yet this phenomenon does not only concern the environment, but also has various notable and important psychological implications for individuals in particular and society in general. Understanding such psychological impacts is crucial for an effective process of mitigation of climate change consequences, however there is limited research about vicarious emotional responses to the threat of climate change. On the other hand, engaging with sustainable development and climate change education is sensibly being widely accepted and embraced as a crucial step towards solving anthropo-generated environmental issues and learning to live within planetary boundaries. Hence, I focused on investigating the most common emotional reactions to climate change and relevant preferred coping strategies among graduate students of sustainability-related programmes to provide some more profound insights in emotional resilience and psychological well-being of the students. In order to do so, I provide an overview of relevant notions of emotion and coping as well as Smith and Lazarus' structural model of appraisal. Then, I show how I used constructivist grounded theory. Through the process of meticulous coding and development of categories, I identified and constructed a visual representation of students' emotional reactions to climate change and associated coping strategies. Throughout their education students experienced a variety of emotions, yet typical solitary patterns of experiencing distinct emotions were absent and different students experienced different emotions. Moreover, students did not necessarily experience just one exclusive emotion, but a combination or alternation of several emotions. Students utilised a range of emotion-, problem-, and meaning-focused coping strategies, which are described in detail. Furthermore, even though several negative emotions and avoidance strategies might have disadvantageous effects on the overall subjective well-being of the students as well as their motivation to be engaged in climate change mitigation, the same emotions can be beneficial in this regard too.

*Keywords:* Emotions, Coping strategies, Climate change, Students, Grounded theory

# Invisible Bricks: urban places for social wellbeing

Hannah Arnett

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– A lived experience of place in the London borough of Tower Hamlets, UK

Social sustainability in urban places is undervalued in urban planning due to the intangible nature of the concept. By valuing citizens' lived experience of place, this research connects social and environmental sustainability pillars to support planning for socio-environmental justice. The quality of the urban outdoor environment is explored in relation to safety and individual and collective efficacy for social wellbeing which contextualises the role of urban green space.

This study suggests socio-environmental sustainability is related at an individual and collective level. Safe social environments can support place attachment processes and safe green spaces can support self-regulation of emotions for social behaviours. The urban outdoors can be viewed as a social learning environment. An inductive interpretative phenomenological analysis (IPA) enquiry has been conducted with citizens, which suggests urban places for social wellbeing can be explained by a framework that integrates social and environmental psychology and spatial politics theories. This study suggests that place attachment is at the heart of dynamic social environments and influences social learning behaviours through vicarious learning and the manifestation of social spaces as framed by *Scannell and Gifford's Tripartite Framework of Place Attachment*, *Bandura's Social Cognitive Theory* and *Lefebvre's Theory of Produced Social Space*.

Designing for socio-environmental justice is associated with understanding human irrationality due to poor social and environmental quality. This research suggests the right to feeling safe and the quality of the urban environment, including safe green spaces, becomes an issue for the operation of democracy and facilitating human efficacy, by recognising the invisible bricks that form urban places for social wellbeing.

*Keywords:* social sustainability, environmental sustainability, social wellbeing, place attachment, social cognitive theory, green space, safety, Urban Mind, London, urban planning, sustainable cities

# Nature in Environmental Psychology

**Chitra Lakhera**

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Ashoka Trust for research in ecology and the environment (ATREE)

This paper attempts to problematize the general conceptualization of 'nature' within environmental psychology. Substantial research in environmental psychology focuses on psychological correlates of differing levels of contact with nature, and the associated pro-environmental behaviours. The paper observes that by conceptualizing 'nature' as a stable, yet indifferent bio-physical system, environmental psychology unconsciously objectifies 'nature'. The consistent emphasis on the need to establish or enhance 'contact' with 'nature' does not fully explore the psycho-social variables that define and govern this 'contact', and one's embeddedness in 'nature'. Further 'nature' or 'natural space' is usually defined in terms of the green cover- presence of trees, plants, or a lake. The paper argues that there is a subtle commodification of nature inherent in this conceptualization. It is only in relationship to individual benefit, in terms of improved physical or mental health, that 'nature' seems to matter. The connectedness with static 'nature' does little to improve the immanent status of 'nature' itself. The paper proposes that for environmental psychology to emerge as a distinct voice in current environmental movement, it must revisit these categories and embrace a more dynamic view of human-nature connectedness.

*Keywords:* Nature, Connectedness, Objectification, Commodification

# **People-place relationship: A framework of place-related concepts to determine pro-environmental behavioural intentions towards nature-based settings.**

**Nam Dang, Oswin Maurer, Linda Osti**

Free University of Bozen-Bolzano

This study presents different approaches to analyse place attachment and other related concepts to determine pro-environmental behavioural intentions towards nature-based settings. It identifies some critical gaps in the literature and extends existing theoretical frameworks by considering additional factors and the entire process from input (activities), through mediations (attachment, meanings, satisfaction) to output (behavioural intentions). Firstly, researchers into date seem to have focused mostly on the current level of place attachment and place meaning instead of investigating their processes. It urges the researchers to seek what makes and enhances the attachment and meanings assigned to a place. Another gap in the literature is the lack of general conceptual structures in some of place activity and place meaning concepts. To address this problem, researchers can focus on some specific available constructs applied to particular spatial settings. Otherwise, a qualitative approach is needed to expand the constructs to be able to include these dimensions and validating the framework quantitatively. Notably, the study outlines why the suggested framework is required for accurate research of people-place relationship by reviewing the definition of various essential place-related concepts.

*Keywords:* place attachment, place meaning, place activity, place satisfaction, pro-environmental behavioural intention

# Reducing Bottled Water Use among Adolescents: A Factorial Experimental Approach to Testing the Components of the “Aquatic” Program

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## *Introduction*

Adolescents are an important target group for promoting pro-environmental behaviors as they are at the life stage of forming their systems of beliefs, morals, and values. The Comprehensive Action Determination Model was used as a theory of change for the development and evaluation of a pro-environmental behavior intervention in adolescence. The aim of the current study was to assess the components of the intervention program “Aquatic”, targeted at the reduction of bottled water use. We examined the impact of five experimental intervention factors (water bottles, promo video, prompts, goal setting, and feedback) on eight intervention program outcomes: Perceived behavioral control, Social norm, Habit, Awareness of need, Awareness of consequence, Personal norm, Intention, and Behavior.

## *Method*

The study sample consisted of 419 adolescents (52.8% girls,  $M_{age} = 15.21$ ,  $SD_{age} = .64$ ) from Lithuania. The Multi-phase Optimization Strategy (MOST) screening experiment was used and a Latent change modeling approach was applied for evaluation of individual and combined effects of intervention components.

## *Results*

Promo video, Prompts, and Goal setting had a positive effect on Awareness of consequence, Social norm, and Awareness of need respectively. Receiving a Water bottle in combination with Promo video had a positive effect on Perceived behavioral control and in combination with Prompts as well as Goals – on Awareness of need.

## *Conclusions*

Four out of five intervention components of the program “Aquatic” had either individual or combined positive effects on program outcomes. Water bottles, Promo-video, Prompts, and Goals, but not Feedback, had clear value for the promotion of targeted pro-environmental outcomes.

# Støyreduksjon i urbane skolegårder. Prosjektstudie Huseby skolegård

Christine Halle Henriksen

Støy er i dag et stort miljøproblem som påvirker lydmiljøet i de norske skolegårdene. Mange skoler ligger sentralt til hvor det kan være mange støykilder fra mekanisk og tekniske lydkilder eller fra barna selv. Når mange barn leker på et avgrenset område kan det oppstå en del rop og skrik som et resultat av barnas engasjement i leken. Rop og skrik kan bli ansett som en støykilde når de dominerer lydlandskapet, er gjentakende og skjer uten forvarsel.

Støy er å regne som uønsket lyd eller lyd med skadelig eller negativ virkning og er i dag et tema som trenger mer oppmerksomhet når landskapsarkitekter skal tegne skolegårder. Behovet for mer oppmerksomhet har sin bakgrunn i at støy kan gi mange negative helsevirkninger og redusere barns evne til læring. Støy kan forstyrre tanker, konsentrasjon, avslapning, rekreasjon og kommunikasjon mellom mennesker. De mange negative ringvirkningene av støy gjør at støyfulle skolegårder i dag går glipp av et potensiale til å virke mer helse- og trivselsfremmende til fordel for barna og de ansatte i skolen.

Det er med dette som utgangspunkt at en plakat fra min masteroppgave vil handle om hvordan man som landskapsarkitekt kan bidra til å redusere støy i skolegårder ved å bruke et sett med anbefalinger for støyreduksjon. Metodene som har vært brukt til arbeidet med oppgaven har vært litteratursøk, intervju, lytteøvelser og observasjon. Hvordan metodene førte frem til anbefalingene for støyreduksjon vil kunne presenteres mer inngående på plakaten.

*Nøkkelord:* Landskapsarkitektur, støy, skolegård, helse, læring