



UK Creativity Researchers' Conference

Wednesday 18th May 2022, London.

Book of Abstracts

Presentations:

From Flatland to DTland: Assessing alternative dimensions of the alternative uses task

Dr Yoed N. Kenett

Technion - Israel Institute of Technology

Divergent thinking is considered a core component of creative thinking. The alternative uses task (AUT), that assesses divergent thinking, is one of the most widely used tasks in creativity research. However, AUT responses are still largely assessed for their content via classic subjective measures of originality, flexibility, and elaboration. This, despite recent scientific focus on the divergent thinking process as a temporally dynamic, multidimensional process. In this talk I will describe various lines of research that examine different aspects, or dimensions, of the divergent thinking process. Specifically, I will highlight the strength of applying computational methods from graph theory and natural language processing to study the role of knowledge in generating original AUT responses; the role of the environment in activating potential affordances of objects that are used as strategies in generating such AUT responses; and how metacognitive processes are utilized in AUT response evaluation. Overall, research on divergent thinking must move forward from WHAT people are generating in their AUT responses, to HOW these responses are generated and how such a generative, creative, process unfolds over time.

Keywords: DT, NLP, network science, embodiment, metacognition

The Sustainable Supperclub: Co-creating Solutions to Wicked Problems

Prof Natascha Radclyffe-Thomas & Haleh Moravej

GCU London & Manchester Metropolitan University

Summer 2020 was a challenging one of many of us but meeting fellow National Teaching Fellow Haleh Moravej, founder of the social enterprise MetMUnch, was the start of a creative collaboration, a fusion of diverse academic disciplines and a shared passion for creative pedagogy.

In June 2020 Natascha presented the keynote at Glasgow Caledonian University London's "Creative experiment in the HE Classroom". Sharing her research and experiences of teaching fashion internationally and in intercultural settings and how she develops globally responsible fashion graduates through a sustainability-focused, internationalised curriculum. Haleh's presentation was one of the symposium highlights; her passion and energy were tangible as she regaled us with how she started with just £20 of cabbage in 2011 and in the decade since has been on a fearless educational journey,

taking the class out of the classroom, engaging students and the community in creative food, nutritional education and sustainable diets.

Seeing parallels between the seriousness of the social and environmental challenges of our respective industries – food and fashion – and recognizing a shared interest in creative problem solving we co-created the first Sustainable Supperclub. An energetic experiential transdisciplinary online workshop “Can mushrooms save the world?” using the lenses of food and fashion to integrate the United Nations SDGs into fun, creative and impactful learning and teaching activities and assessments. This immersive presentation reports on an ongoing creative pedagogies project funded by the Association of National Teaching Fellows and outlines the theoretical underpinnings and ongoing developments of an interdisciplinary creative collaboration powered by our joint passion for purposeful fun.

Keywords: Creativity, Sustainability, cultural heritage, pedagogy, creative problem solving

Students Play and Gamers Learn: Insights for Design Creativity Education from Interviews with Educators and Game Developers

Mr Esdras Paravizo

University of Cambridge

This study explores how game designers and educators consider their target audiences’ creativity and learning experience in their practice (i.e., creating games or courses). Although usually contested, definitions of games commonly highlight that they are characterised by a set of rules in a problem-solving, result-oriented setting, undertaken with a playful inclination. This understanding of games’ fundamental aspects tends to resonate with educators’ daily practice. Teachers and lecturers establish the rules their students must follow, presenting a range of exercises (including problem-solving ones) and evaluating their results, while trying to make the content engaging (or even fun). Unsurprisingly, discussions about game-based learning, serious games and gamification approaches have significantly advanced in the past decades. Nonetheless, a more detailed analysis of game aspects in relation to the design creativity field is still necessary. To that extent, an exploratory study employing semi-structured interviews was conducted with educators from areas related to design and creativity, and developers of games that enable players to build, simulate and explore. From the interview analysis, it was possible to identify areas of convergence and divergence in terms of their practices, as well as relating to their understanding of the broader topic of creativity and learning. This study aimed to contribute towards the approximation of two distinct communities (design creativity and game design), by gathering insight from practitioners at both ends of the spectrum. This discussion can be further deepened and instrumentalised in future case studies and empirical studies.

Keywords: Design creativity, Computer games, Design education

How creative are children -linguistically speaking?

Dr Birsu Kandemirci

Kingston University London

This project explores if, and to what extent, specific linguistic characteristics in children's writing can be associated with human rated creativity. Specifically, the project investigates if computerised linguistic analyses can be used to predict human rated creativity scores. The linguistic analyses conducted in this study are utilising the Computerised Language Analysis (CLAN) and Divergent Semantic Integration (DSI) software. The human rated creativity scores are based on a sample of 160 stories, a subsample of TEDS longitudinal study. The stories were written when the participants were nine years old. As part of an earlier study, the stories were rated for their creativity, as well as for 9 other story dimensions, using the Consensual Assessment Technique (CAT) (Toivainen et al., 2021). The associations are explored individually with 10 story dimensions, as well as with two factor scores, Creative Expressiveness and Logic. The CLAN and DSI provide numerical values for story length, different types of words used in the stories, the lexical diversity of the story, originality of the used words, divergences from rules of the language, and divergent semantic integration. Currently the data is in analysis stage where researchers input the stories into a specific format to analyse on CLAN, as well as inputting the stories on DSI to investigate semantic distance. The project is expected to be completed in April. In this talk, we aim to provide details of this innovative linguistic approach and the practical and educational implications of using a more standardised measurement for creative outputs.

Keywords: verbal creativity, linguistic measurement, CLAN, DSI

Convergent creative process in teams: Teacher perceptions and practices

Dr Kim van Broekhoven

Radboud University

While teachers' practices to foster the generation of creative ideas in student teams is widely investigated, how students narrow down and decide on ideas to implement, and how teachers guide this convergent creative process remains under researched. The aim of the present study is to better understand this process, by exploring how teachers think about and foster this convergent creative process of teams in higher education. In this qualitative study, seventeen semi-structured interviews were conducted with teachers from the 'innovation project' at Radboud University in the Netherlands. In this project, teachers supervise teams of first-year medicine and biomedical science students who define a health(care) problem, and develop an innovative solution to it. Preliminary results show that teachers characterize this convergent creative process as iterative and dynamic with numerous back and forth movements in revising and refining ideas, and as highly affective where students experience anxiety, frustration, and disappointment. Teachers generally do not intervene, but only under (i) time pressure and (ii) contingent on the difficulties and needs that students face at that point. For instance, at the end of the project, teachers intervene more often by validating students' idea choices, and advising them to write down or sketch their ideas that they would like to implement. Contingent on student needs, when students experience anxiety, teachers create a safe environment in which students are encouraged to occasionally fail, take risks, and consider innovative ideas in their decision-making process, for example, by explaining that the process is more important than the final innovation, by explaining that students would still pass the course even though their innovation fails, by providing examples from practice where innovation did not succeed in the end. These findings will inform teacher educational programs in guiding convergent creative processes within teams.

Keywords: Creativity; Convergent creative process; Team; Teacher; Higher education

The People Make the Place: Advancing a Model for the Role of the Non-Creative Personality in Workplace Creativity

Dr Mark Batey

Manchester Metropolitan University Business School

For too long the individual differences paradigm has myopically focused on the individual lone creator. The search has been to identify the traits and dispositions that predict the highly-creative individual, often based on laboratory studies of students responding to divergent thinking assessments. Yet, most work in organisations is conducted in teams, with evidence suggesting that deep-level diversity is an important determinant of team creativity and innovation. This raises the simple conundrum, if diverse teams are more creative then surely there must be a role for the 'non-creative' personality in a creative team. This presentation forwards a model for how highly-creative and 'non-creative' personalities interact during the creative problem solving process to deliver new and useful ideas.

Keywords: creativity, team creativity, personality, creative problem solving, team creative problem solving

Spotting the Needle in the Haystack: Tertius Iungens and Recognizing Novel Ideas

Miss Velvetina Lim

UCL School of Management

Although research has produced many insights regarding why people find it difficult to recognize novel ideas, much less is known about what helps people recognize novel ideas. Here, we focus on tertius iungens brokers—people who have a strategic orientation toward coordinating connections between others who are not directly connected or coordinating new collaborations between those who are already connected. We suggest that an orientation towards coordinating others tends to enhance an individual's ability to perceive what is novel, gain knowledge about varying novelty standards, and engage in perspective taking to understand what others perceive as novel. Together, we propose that tertius iungens brokerage leads individuals to have enhanced novelty recognition. In Study 1, we tested this prediction in a within-person experiment in which participants evaluated the novelty of product patent ideas in the United States. In Study 2, we replicated the link between tertius iungens brokerage and enhanced novelty recognition in a within-person experiment in which participants evaluated product ideas from a crowdfunding website. In Study 3, we investigated how tertius iungens relates to novelty recognition in an organizational study of employee-manager pairs engaged in creative work, and further tested how listening moderates the relationship between tertius iungens and novelty recognition. Together, these three studies provide support for our predictions, highlighting the important role that a strategic orientation towards bringing others together can play in recognizing novel ideas.

Keywords: novelty recognition, tertius iungens, brokerage, idea evaluation

Creative freelancers and the power of place

Dr Victoria Barker

Creative Academic

Drawing on research with creatives and artists in and of Coventry during its City of Culture year, this discussion explores some of the implicit and explicit connections between creativity and place from a social science perspective. How do self-defining 'creatives' connect with the place that they live and work? What part does place play in their creative ecosystem? This presentation offers one perspective on this discussion and seeks to identify further connections with the study of creativity in other disciplines.

The research underpinning this presentation draws from two projects conducted during 2021. The first of these, 'Cov Made Me', was an artist-engaged conversation combining film and qualitative research to explore the connections between Coventry and individual creative practice. The second piece of work was funded by Nesta's Policy and Evidence Centre for the Creative Industries, and explored the place-based impacts of creative freelancers and their business models. The work proposed a typology for better understanding creative freelancers, categorising everything from their motivations for becoming self-employed, to how their roles fit into the wider economy, and the impact that the places where they live and work have on their professional roles.

Dr Victoria Barker is a postdoctoral research fellow at Coventry University's Institute for Creative Cultures. Her work focuses on creativity and place, and her thesis 'Negotiating the Creative Ecosystem' won the Royal Geographical Society's Economic Geography Research Group prize in 2019.

Keywords: place, freelancer, artist

A Developmental Framework for Creativity Assessment Across the Lifespan

Jonathan Plucker, Melanie Meyer, and Matthew Makel

Johns Hopkins University

Creativity is a critical aspect of academic achievement, talent development, and adult professional accomplishments, which makes identifying and developing creativity-related skills an important focus across several life stages. Assessing creative potential and performance can provide educators and employers with data to guide further development, support innovation, and evaluate program effectiveness. Due to the sociocultural and developmental nature of creativity, the components necessary for an effective creativity assessment system need to be adapted for different stages and contexts (e.g., PreK-12, postsecondary, workforce). This paper discusses several developmental factors to consider in the assessment of creative potential and ability, including attitudes toward creativity, the specificity of creative processes, levels of creative expression, and the need for creative articulation, and introduces a developmental framework for designing creativity assessment systems. The framework can serve as a tool for planning assessment development and help launch the agenda for the future of creativity assessment.

Keywords: assessment, development, lifespan creativity

Constraint Management and Optimization for Creativity and Innovation

Dr Kelsey Medeiros

University of Nebraska Omaha

Constraints are an inherent component of creative efforts. As such, it is critical that we understand their role and how they can be managed to optimize creative performance. Emerging research focused specifically on this line of inquiry, however, has produced mixed results. We argue that this is due to a hyper focus on the main effect of constraints on creativity, rather than a more complex interaction between constraints, people, and the situations. Our proposed model advances the literature in this area by arguing for a revision of how researchers think about the impact of constraints on creativity, moving from an overly simplistic view to one that more appropriately captures the complexity at hand. We integrate the findings to date to propose a new model and a critical path forward for future research in this area. In doing so, we make a significant theoretical contribution and provide an avenue for practical constraint management advice that leaders and their teams can use to optimize creativity and innovation.

Keywords: Constraints; constraint management; constraint mindset

Creativity to be hidden

Prof Kerstin Stutterheim

Edinburgh Napier University

Often, it is assumed that documentary films derive from observing the reality, capturing the material, and editing it into a convincing narrative. Documentary films get therefore lower budgets and filmmakers or their teams get lower fees, since it is regarded of being close to journalism and documenting, not so much to creativity involved.

With my presentation, I would like to give an inside to how much creativity is necessary to conceptualise, direct, and produce a documentary that as a result looks like a documentary. Erwin Leiser, the director of many famous documentaries, once wrote: The art of documentary filmmaking requires that nobody discovers the artwork when the film is finished. Today, we, the filmmakers are much more required to be creative and in hiding the creative element.

I will refer to examples of my own work (Bauhaus – Model and Mythos was awarded the Silver Award at the Festival on Films on Art Montreal; Flies & Angels with an Award at the Festival of Films on Art in Szolnok, for example) as well as the End of Time by Peter Mettler, The Island of the Hungry Ghosts by Gabrielle Brady, and Aquarela by Victor Kossakovsky.

With these examples I aim to demonstrate how creativity also hidden, give these films their quality addressing the emotional intelligence and response of their audience.

Keywords: Creativity and Documentary filmmaking; implicit dramaturgy

A Meta-Analytical Review of the Mindfulness-Creativity Link: Framing Current Lines of Research and Defining Moderator Variables

Miss Zoe D. Hughes

University of Central Lancashire

Practicing mindfulness has been linked with a myriad of outcomes across multiple psychological domains, including creativity. However, findings relating to the impact of mindfulness interventions on creative performance remain inconsistent, perhaps because of discrepancies between study methodologies. To derive a clearer understanding, two meta-analytical reviews were conducted, drawing respectively on studies using a control group designs ($n = 20$) and studies using a pretest-posttest designs ($n = 17$). A positive effect was identified between mindfulness and creativity, both for control group designs ($d = 0.42$) and pretest-posttest designs ($d = 0.59$), whilst subgroup analysis revealed that intervention length and type of control group (active vs. waiting-list vs. no-treatment) significantly moderated the relationship. Findings also lend support to the claim that mindfulness impacts divergent and convergent thinking differently. Taken together, the results support the view that mindfulness is effective at improving creative performance, thereby resolving discrepant findings in the literature. We discuss the results in relation to the theoretical underpinnings of divergent and convergent thinking so as to provide an explanatory account of the beneficial impact of mindfulness practice on creative performance.

Keywords: Meta-Analysis, Mindfulness, Creativity

Poster Presentations

Comparing Measures of Malevolent Creativity

Muna Ali*, Rory MacLean, and Lindsey Carruthers

Edinburgh Napier University

Malevolent creativity (MC) is a relatively new field within creativity research and is defined as the creativity with the intention to do harm. Studies surrounding MC have been on a steady increase for many years, but there is still one overwhelming criticism of MC, a lack of congruent measurements. The theories and scales behind all the current methods being used have their merits, however the notion of the field of MC growing without consistent dimensions and measures of MC is one that should not be entertained. In light of this, the current study investigated four very common measures of MC (Malevolent Creativity Behaviour Scale, Kapoor Intention Scale, Malevolent Creativity Task, and Divergent Thinking Tasks), alongside a validity measure. 100 participants were asked to complete all five of the measures stated above and then was analysed using mainly regression analyses. The intention of this being to discuss and consider the most robust options of measurement to aid MC future research. This analysis is still in progress but will be presented at the time of the conference.

Keywords: malevolent creativity, MC, creativity

Challenges to Idea Generation in Groups

Kevin Byron

Free-lance (and Guest lecturer at Leeds University)

This paper/poster will explore two factors that militate against the assumed improved productivity of group work in generating ideas. The first concerns group dynamics that influence the emotional state of individuals working in groups. The second one concerns the constant shifts of attention in group working that disrupts creative thought. In both cases remedies will be discussed that overcome these issues thereby leading to improved productivity whilst still maintaining the group experience.

Decision Construction Across the Spectrum of Expertise: A Scoping Review of the Literature

Theresa Jung*, Lindsey Carruthers and Jennifer Murray,

Edinburgh Napier University

Within psychology of creativity and problem solving, there is a robust finding that the longer an individual spends actively identifying and understanding a new problem, the more creative their solutions will be (Reiter-Palmon, 2017). “Problem Construction” is the process of defining the problem, clarifying its parameters, and understanding or developing its structure before active problem solving begins. There are several benefits to partaking in this automatic (but trainable: Reiter-Palmon & Robinson, 2009) process, and overall, more time spent on Problem Construction seems to differentiate experts from novices (e.g., Voss et al., 1991).

Solving problems creatively and making effective decisions contributes to both personal and economic development and success in society. Counter-intuitively, experts spend much less time when making decisions than intermediates, but their decisions are better. Could it be that experts spend more time on problem construction unconsciously? Does this increase decision accuracy? Would this “decision construction” mediate differences in decision accuracy between laypeople, intermediates, and experts?

The current scoping review addresses this gap in the literature by synthesising papers on problem construction. The scoping review is executed according to Arksey and O’Malley’s (2005) framework. The researchers identified search terms relating to problem construction (i.e., problem construct*, problem identif* or problem defin*) that were searched within titles and abstracts in addition to controlled terms (i.e., creativity, problem solving or decision making) across an extensive range of psychological and social science databases. Resulting papers will be screened against the inclusion criteria in two stages of title and abstract screening, followed by full text screening. Included papers will be synthesised and reported according to PRISMA-ScR (Tricco et al., 2018) guidelines.

Keywords: problem construction, problem identification, problem solving, creativity, decision making, expertise

Creativity in Evaluation Research and Practice

Pinar Ceyhan and Violet Owen

Lancaster University

Evaluation is the process that examines a subject’s (i.e., programme, organisation, system and service) merit, worth, or value and helps to determine and improve their effectiveness and impact. As a discipline, evaluation has evolved to address the contextual circumstances of its subjects, meaning that it often draws theoretical and methodological insights from other disciplines like sociology, design, arts and statistics. Generating or recognising ideas, connections and possibilities beyond evaluation’s disciplinary boundaries require openness, flexibility, and adaptability, often associated with creativity.

The need for creativity in evaluation has been first voiced by Michael Quinn Patton in his 1981 book *Creative Evaluation (CE)* which called evaluators to start thinking more creatively within their practice. Since then, CE has been developed as a constellation of evaluation approaches that employ methods and tools often associated with artistic, participatory, exploratory, co-design and co-creative methodologies (Christou et al. 2021). Our presentation aims to discuss creativity in evaluation research and practice, as an example of a discipline that is often viewed as ‘dry’ or ‘bureaucratic’ and yet it has been showing great potential of applying and exploring creativity within its scope. Our presentation will discuss innovative creative evaluation methods and tools that draw from an array of disciplinary and practice fields like the arts, design and biophysics, and demonstrate the potential that cross-, inter- and trans-disciplinary approaches such as CE have in addressing the complex problems of our time?

Keywords: creative evaluation; creative methods; creative approaches; creative thinking; transdisciplinary approaches

The Role of Creativity in Tourette’s Syndrome

Laura Colautti

Catholic University of the Sacred Heart, Milan, Italy

Tourette’s Syndrome (TS) is a neurodevelopmental disorder characterized by the presence of both vocal and motor tics with impairments in daily life. Tics are mainly caused by an over-activation of dopaminergic circuits in basal ganglia which involve the frontostriatal system. Creativity has a key role in developing alternative strategies when individuals are challenged. Considering the neural overlapping of structures involved in TS and in creative thinking, the excess of dopamine - characterizing TS - may enhance creativity, being a resource for TS patients to cope with their symptoms. On these grounds a study was conducted aimed at: 1) testing the level of creativity in TS patients; 2) investigating whether creativity can be a resource for their symptomatology. We preliminarily assessed 18 TS patients (66.7% males; age: $M = 27 \text{ years} \pm 4.84$; education: $M = 16.2 \text{ years} \pm 3.44$) and 18 gender-, age-, education-matched healthy controls (HCs). The Parallel lines subtest from the Torrance Test of Creative Thinking was administered to assess four parameters of creative thinking (fluency, flexibility, originality, elaboration) and the Yale Global Tic Severity Scale was used to assess tics severity. From analyses emerged that TS patients showed no significant differences in the parameters of creativity compared to HCs. However, in the TS sample patients with higher levels of flexibility perceived less personal discomfort and social impairment caused by tics than patients with lower levels of flexibility. Results highlighted the importance of cognitive flexibility to improve the quality of life and wellbeing of TS patients.

Keywords: Tourette's Syndrome; tics; creative thinking; flexibility

Divergent thinking and cognitive reserve: their role in psychological wellbeing and successful ageing

Laura Colautti

Catholic University of the Sacred Heart, Milan, Italy

Thinking in a creative way, and in particular the ability to think “divergently”, is crucial for the elaboration and implementation of new and functional strategies and may represent a crucial component in promoting wellbeing and autonomy in ageing. Structural and functional changes due to ageing may affect this ability, leading to a progressive cognitive decline. However, several activities (i.e. mental, physical, social etc) may contribute to increasing lifelong cognitive reserve (CR) which represents a protective factor against cognitive decline.

According to literature, divergent thinking (DT), that is a multi-component construct that includes both executive and memory processes, stimulates several cognitive domains, representing an important component of cognitive reserve in older adults. The aim of the present study was to investigate the relationship between DT, CR and psychological wellbeing in ageing.

We collected measures of visual and verbal DT, CR, perceived well-being, and depression in a sample of 95 healthy Italian older adults (age: M=73.2; DS=6.48; educational level: M=10.8; DS=4.20; 54 women). Results pointed out that figural DT is negatively correlated with depression and positively correlated with CR. As expected, significant positive correlations emerged between CR and wellbeing scores. Mediation analysis showed that participants' perceived wellbeing is significantly predicted by the figural DT and CR interaction. Figural and verbal DT differentially impact CR, and therefore on wellbeing, suggesting potential novel implications for the promotion of active ageing and for clinical interventions addressed to patients affected by cognitive impairments.

Keywords: creativity; divergent thinking; ageing; cognitive reserve; wellbeing

Object and Spatial Visual Imagery in Creative Garment Design

Lauren Cox

University of Buckingham

Despite considerable research, the role played by visual imagery vividness (VIV) in relation to creativity remains unclear. However, Blazhenkova and Kozhevnikov developed the Object-Spatial Imagery and Verbal Questionnaire (OSIVQ; 2009), which argued for a 3-way division of cognitive style, correlating with creative production in visual arts (Object/O), science (Spatial/S) and writing (Verbal/V). Nevertheless, studies have argued that the preference for O imagery over S may not be so clear-cut in artistic domains such as dance, photography and sculpture, which may blend aesthetic (e.g. colour, form) with spatial (alignment, orientation) imagery. This study looks at the motivations for garment-making among home sewists, using a novel questionnaire based on a qualitative study by Kaipainen and Pöllänen (2021). 198 home sewists completed this questionnaire alongside the OSIVQ. Principal component analysis revealed six motivational factors for sewing. These were identified as 'Pride in Community', 'Interest in the Design Process', 'Aesthetic Motivations', 'Eco-Utility Motivations', 'Desire for Unique and Striking Items', and 'Interest in Technical Processes'. As expected, significant correlations were found between O imagery and 'Desire for Unique and Striking Items'/'Aesthetic Motivations'. Similarly, high scores on 'Interest in the Design Process' were positively correlated with S. Further refinement of the sewist motivations scale is necessary to improve loading of the various factors, and this may strengthen and clarify the relationship with OSIVQ further. Nevertheless, this study broadly supports the findings of Blazhenkova and Kozhevnikov but, as indicated elsewhere, application of the model to the artistic domain may need to be more nuanced.

Keywords: OSIVQ; Sewists; Object imagery; Spatial imagery; creativity; garment design

COVID-19 and the “valley of dead creativity”: Different creative activities distinctively influenced during social distancing

Sven Form

University of Applied Science Bingen

Both social interaction and the lack thereof, solitude, have been discussed as being beneficial for creativity. Strikingly, in both cases there seems to be an implicit assumption that different creative activities are all influenced in the same way. However, the idea that different creative behaviours are all equally influenced by social interaction seems not reasonable (e.g. writing a poem vs. singing your self-written song at a family celebration). The reduction in social contacts enforced by authorities in Germany during the coronavirus pandemic offered a unique opportunity for a field experiment with high ecological validity. To explore how different creative activities are each influenced by reduced social interaction, 136 participants were asked in an online survey using a proxy pretest design about the frequency of everyday creative activities before and during the core episode of social distancing as well as the degree of reduced social contacts. The change in frequency for performing a given creative activity depended on the frequency at baseline, but not in a linear manner. Instead, there was a U-relationship representing a “valley”: creative activities most frequently performed at baseline showed an increase in frequency, creative activities of medium frequency at baseline decreased and the least frequent activities changed the least. Recalling the four p’s of creativity, it is generally accepted that characteristics at the person level differ between domains (scientists vs. artists). It is therefore surprising that we commonly assume press level features work the same way across all domains, which is challenged by the current study.

Keywords: social interaction, social distancing, everyday creativity, domains

Being polymathic about polymaths: Assessing interdisciplinary creativity inspired by diversity measurement in ecology

Sven Form

TH Bingen

Recently, Araki et al. wrote creative polymathy has not yet been operationalized, but they also defined three criteria for it: breadth, depth and integration. Breadth is the diversity of knowledge in different domains. Depth concerns expertise within a domain. Integration refers to integrating ideas, methods, styles, etc. of distinct domains. If polymathy is considered a quantitative rather than a qualitative trait, these criteria can be assessed by drawing upon the measurement of diversity, which is an established practice in ecology. In this field, different diversity indices are available for different purposes. By transferring this practice across disciplinary boundaries, we can develop indices for polymathy. The underlying rationale is to apply the same framework of metrics but “feed” it with numbers of other countable entities. For polymathy, numbers can be taken from individual scores of any creativity test, which measures different domains. More precisely, the number of domains may serve as index for breadth. The number of points within a given domain may assess expertise for this domain and, thus, depth. Finally, the so-called Simpson index is useful to describe whether points accumulate in a single domain or are similarly distributed across domains. Thus, it can serve as a proxy for integration. These polymathy indices were validated in a secondary analysis (including necessary condition analysis) by comparing them to personality traits recently suggested for polymathy. Results indicate the present approach enables new insights into creative polymathy, e.g. openness might not be merely associated with polymathy, but might be a necessary condition.

Keywords: creative polymathy, measurement, interdisciplinary creativity

Overcoming Functional Fixedness may Moderate the Correlation between Hypomania, Creative Potential and Type of Major in Undergraduate Students.

Dhea Kothari

Union College

There is an extensive amount of research that has examined the positive relationship between creativity and hypomania in terms of creative accomplishments, eminence, behaviors, occupations. Previous research had recruited participants based on creative occupations or stages of hypomania or bipolar disorder. This thesis focused on the relationship between hypomania and creative cognitive potential, such as divergent thinking and insight problem-solving. This was examined at an undergraduate educational level by recruiting students majoring in art, majoring in natural sciences (NSCI) and those double majoring in arts and NSCI. Participants were given a modified Alternate Uses Task (AUT) to measure divergent thinking and a set of rebus puzzles to measure insight problem-solving. Both tasks involved a level of overcoming functional fixedness. A negative association was observed between hypomania and originality of responses on the AUT when an object with low functional fixedness was given to all participants. On the other hand, a positive association was found between hypomania and originality of responses on the AUT when an object with high functional fixedness was given to the participants majoring in NSCI. Therefore, the research suggests that an increased ability to overcome functional fixedness might be central to individuals with hypomania and individuals with higher creative cognitive potential.

Keywords: Creativity, Creative Cognition, Convergent Thinking, Divergent Thinking, Hypomania, Insight, Major Type, Problem-Solving

Perceptions of art academics: Enhancing creativity of studio art undergraduates

Caroline Madden

National College of Art and Design

Purpose: Previous research indicated that educators need to place a greater emphasis on creative and cultural education. The purpose of this study was to discover the pedagogy of academics that are enhancing the creativity of their students. Foundational to this study are the theories of principal centered leadership and servant leadership as these theories provide the focus for transformational educational leadership. The investment theory of creativity educes the expectation that faculty will find a way to improve their teaching for creativity, and that students will inherently think creatively producing work of an original nature.

Method: A qualitative phenomenological methodology was chosen to provide a holistic landscape of the phenomenon explored. Because the function of art has always been to think beyond the conventionalized and ordinary pattern of consciousness, the population for this study was composed of academics charged with increasing the creativity of their students. The participants were chosen by purposeful selection and snowballing technique. Ultimately ten respondents comprised the sample.

Major Findings: The inductive reflective analysis of voiced participant opinions revealed the following themes: exposure—multifaceted perspectives, immersive cultural experiences, and symbolic language systems instilled student discernment; time—relative to creativity; vehicles of expression—an extension of the individual's creative processes; student traits—confidence, motivation and self-reflection are synonymous with creativity; and problematic assessment—is developmental rather than conclusive.

Recommendations for further research included a study exploring student perceptions of pedagogy that enhances their creative abilities, a phenomenological study giving voice to student perceptions for personally designed activities that enhance their creativity, a comparative study collecting male and

female academics discourse relative to their perceptions of pedagogy that enhance studio art undergraduate ability, and a quantitative study on the impact of lateral thinking programs upon the creative abilities of studio art students.

Keywords: Creativity

Additive and Subtractive Changes in Problem Solving with Lego

Daniel McCarthy

University of Buckingham

Problem solving is a fundamental aspect of everyday life, because of this there is a tendency to create mental shortcuts to make problem solving more efficient. In doing so one may overlook a creative solution that may be better, by employing such mental heuristics. Recently a heuristic has been proposed whereby people favour a solution that involves addition even when subtraction is the more optimal solution. The present study aimed to provide a proof of concept for a heuristic for addition, using an improved experimental test. The new methodology additionally enabled aspects of fixation to be explored in this context, which has also been identified as a barrier to creativity. To do this three Lego puzzles were designed, these focused on the idea of adding or subtracting blocks to make a complete layer on top of a Lego tower. Each tower had a set number of blocks in a predetermined random position that participants could choose to add or remove to solve the task. The first puzzle had 50 blocks on meaning participants could either add 50 or remove 50 blocks, this was to assess initial solving choices. The following two puzzles became increasingly more costly to add bricks rather than remove. With the final condition being four times more efficient to subtract than add. Overall, there were 30 participants, 93.3% of participants initially solved the problem using addition with 86.7% choosing to remain with this method even though it was more costly across the trials. The result provide evidence for a new methodology to test for a heuristic for addition and demonstrate the potential for design fixation to co-occur and further block creative problem solving. These results highlight how a heuristic for addition can lead to a suboptimal solution, as it stopped people looking for a more creative solution.

Keywords: Problem Solving, Addition and Subtraction, Lego

Caring for the Carers. Culturing Creativity as a Wellbeing Resource for Doctors.

Linda Miller

Birkbeck, London and NHS England

The main health care sustainability risk globally is workforce retention. Many doctors suffer with burnout and leave the profession. Under resourcing adds to rota gaps, workload and stress and doctors are afflicted by the “4 D’s” depression, drug and alcohol dependence, divorce, and death by suicide. (400/year in the USA). Stigma prevents doctors seeking help, so the Practitioner Health Programme was set up for the “wounded healers”. However, little has been done to nurture the wellbeing of doctors and prevent burnout; salutogenesis. The pandemic brought added pressures with staff absences through infection, death, and bereavement. Thursday evening clapping was replaced by, media fuelled, misplaced anger at the virus, aggression, and violence particularly targeted at GPs. Remote consulting, commanded by the government for infection control, has made healthcare more challenging and isolating.

Combining creativity with positive psychology coaching, in collaboration with a team of artists and performers, a range of creative workshops were designed to support doctors’ well-being. During lockdowns these became virtual and were delivered through the Royal College of GPs and the School of Paediatrics.

A solid evidence base supports arts for health and participants find themselves in a “flow” state, creating. Sharing creations and benefitting from appreciative inquiry with peers that makes them feel valued and appreciated, energised, reconnected with their core drivers, and engaged. Being challenged to try a novel activity whether improv, cartooning, singing, or writing a Haiku enhances self-efficacy. A by product is the appreciation of “social prescribing” for patients.

Keywords: Creativity, Doctors, wellbeing, Medical Humanities, Arts in Health, Burnout, Health, Cartoon, Improvisation, Social Prescribing.

Students Play and Gamers Learn: Insights for Teaching Design Creativity from Interviews with Educators and Game Developers

Esdras Paravizo* and Nathan Crilly

University of Cambridge

This study explores how educators and game developers consider the creativity and learning experiences of their students and players. Although usually contested, definitions of games commonly highlight that they are characterised by a set of rules in a problem-solving, result-oriented setting, undertaken with a playful inclination. This understanding of the fundamental aspects of games tends to resonate with educators’ daily practices. Teachers and lecturers establish the rules their students must follow, presenting a range of exercises (including problem-solving ones) and evaluating their results, while trying to make the content engaging, or even fun. Unsurprisingly, discussions about game-based learning, serious games and gamification approaches have significantly advanced in the past decades. Nonetheless, a more detailed analysis of games in relation to the design creativity field is still necessary. To address this, an exploratory study employing semi-structured interviews is being conducted with creativity educators, design educators and game developers. Initial results will be reported, including on themes related to problem solving, fixation, and different ways to promote and assess creative behaviour. The connections and contrasts between the knowledge, attitudes and practices of educators and developers will be further explored in additional interviews and case studies.’

Keywords: Design creativity, Computer games, Design education

Creative Therapeutic Flow

Ailsa Parsons

University of Salford/Authentic Moves

Attendees are invited to consider and explore how psychological research can be communicated and encountered meaningfully through collaborative, enactive and embodied arts. Psychological flow has been explored within many domains including the arts, yet very little is known about its application within creative arts therapies. Through thematic analysis of focus group data from 13 participants who took part in a multimodal creative arts therapy workshop (Arts for the Blues) this study provided the basis and detailed description of a new concept: Creative Therapeutic Flow. Participant experiences highlighted that therapeutic activity using creative materials in a group context invoked a form of flow that may be prevalent within creative arts therapies. An artistic enquiry and musical representation of findings is offered for conference attendees, in which both researcher and attendees are invited to invoke and embody the Creative Therapeutic Flow concept by actively engaging with a simple circle/ceilidh-style dance to a piece of music composed by the researcher. Focus group participants from the original study expressed that Creative Therapeutic Flow afforded and encouraged moments of sudden, impactful insight and realisation that may be analogous with psychotherapeutic and personal/professional development outcomes. The researcher herself has enjoyed such outcomes through translating this work to musical and collective dance format while in flow state, and it is hoped that by actively engaging

with the findings through music and dance, attendees may be able to co-constructively feedback any emergent meanings in relation to research, representation of knowledge, creativity, embodiment and flow.

Keywords: Flow; Creative Arts Therapies; Multimodal Arts; Creative Therapeutic Flow; Collaborative Arts; Co-Constructive; Dance; Music

The effect of noise on creativity in the classroom

Emily Spencer*, Lindsey Carruthers, Barbara Piotrowska, Rory MacLean

Edinburgh Napier University

Creativity is one of the most important skills that children can learn, but the environmental factors affecting it in the classroom remain unclear (Chan & Yuen, 2014). Noise is a considerable factor in classroom settings (Massonnié et al., 2019). Yet, the results of the few studies that have investigated its effects on creativity have had mixed findings, with some showing a negative influence on creativity (Hillier et al., 2006), and others suggesting moderate noise enhances creative performance (Toplyn & Maguire, 1991). Further evidence suggests that the impact of noise on creativity is modulated by attentional resources (e.g., Massonnié et al., 2019; Mehta et al., 2012). However, most studies use just one measure of creativity – usually a written task – which excludes participants who may not have strengths in that area. Limited ecological validity also means that these results cannot be generalised.

Before we can identify the effects of noise and potential mediating factors on children's creativity in the classroom through empirical measures, an online focus group was conducted to obtain information about the implementation/ encouragement of creativity in the classroom, and the use/ management of noise. Participants were teachers recruited from Scottish primary schools. Data from the discussion was used to answer the following research questions: What are teachers' understanding of creativity and their role in developing creativity in their pupils? How important is creativity in the classroom, according to teachers? What are the challenges associated with supporting classroom creativity? Progress and results will be available for presentation at the conference.

Keywords: Environment, Press, Cognition, Process

Mental health and creativity in middle childhood

Rebecca Smees

University of Sussex

The links between a mental health/well-being and creativity have been investigated widely in adults, linking increased creativity to a few specific conditions such as bi-polar disorder. Better mood and well-being have also been associated with modest improvements in creativity. However, we know less about the potential links between in children, especially for mental health conditions that usually require a clinical diagnosis. The current study examines parent's reports of their children's anxiety (including OCD), emotion reactivity (positive and neg, and general well-being (including life satisfaction) in children aged 10-14 years. Creativity ratings were collected from children and their parents on creative personality traits (eg. creative thinking skills), creative self-concept and inclination towards arts activities. Analyses found better psychological health to be differentially associated with creativity. Specifically, whilst better mental health predicted elevated creative thinking skills, poorer mental health was associated with greater inclinations towards the creative arts.

Keywords: mental health, anxiety, OCD, well-being, life satisfaction, children

Switching ‘om’. A creative boost by meditation and brain stimulation.

Maria Elide Vanutelli

Università degli Studi di Milano, Milan, Italy

Mindfulness is one of the most popular meditation techniques. It refers to the attitude of bringing the attention to the present moment by directing the awareness to one’s own breathing, thoughts, physical sensations, and feelings that are experienced. This practice should be addressed in a non-judgmental way: Instead of reacting to those processes, the aim is just to note them and let them go.

Previous research has suggested the presence of a relationship between mindful states and creativity, but the heterogeneity of the constructs did not always make it possible to identify consistent results. However, based on the characteristics of mindfulness practice, greater influence on cognitive efficiency and convergent thinking could be expected, whereas lateral thinking is more often associated with mind-wandering states.

To investigate this possible double dissociation, 43 volunteers have been recruited and randomly assigned to 4 different experimental groups: Group A was guided with real meditation and received anodal tDCS (a-tDCS) on the right inferior frontal gyrus (IFG). Group B: real meditation + sham stimulation. Group C: fake meditation + a-tDCS. Group D: real meditation alone. Each training lasted 4 consecutive days and its efficacy was investigated by conducting a pre/post training assessment of cognitive and creative skills.

Coherently with our hypothesis, mindfulness meditation produced favorable results only in relation to convergent thinking. Fake meditation, on the other hand, modulated divergent thinking. Results will be discussed at light of the neurofunctional models of creativity, including the role of the IFG and the Default Mode Network (DMN).

Keywords: meditation; divergent thinking; convergent thinking; tDCS; creativity

How children and adults process visually and auditory ambiguous information

Marina Wimmer

Edinburgh Napier University

Our day-to-day environment is often ambiguous and our visual and auditory systems are tasked to make sense of these ambiguities. Recent viral phenomena of perceptual ambiguity in the visual (‘blue/black versus white/gold’ dress) and auditory (‘yanny/laurel’) domains have highlighted gaps in our knowledge concerning why people perceive stimuli in different ways.

Here we report two studies examining how children (6-11-year-olds) and adults disambiguate visual and auditory information and the link to creativity and goal-directed behaviour. The number of switches that people report in both visual and auditory ambiguous stimuli increases with age and is not linked to specific creative ability nor goal-directed behaviour. Additionally, perceptual switching in one domain such as vision is not related to switching in another such as audition and vice versa already from a young age. Thus, the way we disambiguate information and make sense of our visual environment is hugely task and modality specific, and cannot be attributed to common creative and goal-directed processes. This highlights the discrepancy in what people perceive in an often ambiguous world.

Keywords: cognitive development; visual ambiguity; auditory ambiguity; creativity; goal-directed behaviour

Sparking Creativity: Encouraging Creative Idea Generation through Automatically Generated Word Recommendations

Talia Wise, Gal Samuel, Yoed Kenett*

Technion – Israel Institute of Technology

Creative block is a familiar foe to any who attempt to create, and is especially related to “writers block”. While significant effort has been focused on developing methods to break such blocks, it remains an active challenge. The current study presents an initial proof-of-concept for a cognitive network sciences-based online algorithm that aims to spark creative ideas: Once a participant “runs out” of ideas in a creative idea generation task, our algorithm suggests word-recommendations to prime new ideas. These word-recommendations are either towards or away from previous ideas, as well as close or far from the target object, based on a conceptual space extracted from the participants responses using online text analysis. Our results indicate that the location of word-recommendations affects the fluency and creativity of ones’ ideas. In addition, we show how low- and high- fluent individuals differently benefit from these word-recommendations.