



Welcome to the Third All-Ireland Conference for Undergraduate Research (AICUR), hosted by the Centre for Teaching and Learning and all University of Limerick faculties.

What is AICUR?

AICUR is just like any other academic conference but what makes it special is that the presentations will be delivered by undergraduate students showcasing research work they have done as part of their studies.

The main aim of AICUR is to promote and applaud the fascinating and worthwhile research work that goes on at undergraduate level. In multi-faceted ways, it supports and recognises the development of UL's Graduate Attributes: articulate, proactive, responsible, collaborative, knowledgeable, and creative. The conference is designed to give undergraduate students (from first to final year) from colleges and universities across Ireland the opportunity to present their research and discuss their creative accomplishments through posters, performances, demonstrations and oral presentations. The goal is to give undergraduate students from across the country the opportunity to present their research work at an academic conference. This year's participants are paving the way for all future AICUR events and should feel themselves pioneers, exploring the parameters of what undergraduate research in higher education can achieve.

We have structured the programme to create interdisciplinary and cross disciplinary themes so that papers from different fields of study can come together allowing for, and encouraging students, and attendees alike, to interact with and learn from their peers across the academy. Apart from creating academic opportunities, we want to provide opportunities for a dynamic exchange of ideas as this is really at the core of AICUR. It is hoped that during the conference you will be able to meet and talk to undergraduate researchers and faculty across many disciplines and this, in turn, will provide an insight into how other disciplines approach research problems.

'By heightening awareness and creating dialogue, it is hoped research can lead to better understanding of the way things appear to someone else and through this insight lead to improvements in practice.'

Barritt (1986: 20)

The AICUR Organising Committee  
Limerick, 2016





## AICUR Organising Committee

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## Acknowledgements and Thanks

**Special Thank You** to the Deans and Faculties at the University of Limerick who contributed in many ways to the AICUR event. The AICUR Organising Committee would also like to thank our sponsors who have generously supported the AICUR awards.

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**Lara Coyle, Undergraduate Awards**

Cited as the ultimate champion for high-potential undergraduates, The Undergraduate Awards is the world's largest international academic awards programme. It is uniquely pan-discipline, identifying leading creative thinkers through their undergraduate coursework. The Undergraduate Awards provides top performing students with the support, network and opportunities they require to raise their profiles and further their career paths, as well as awarding the Overall Winners with a gold medal and publishing their work in The Undergraduate Journal



## Student Presentations (listed in alphabetical order by presenter name)

### Corpus Consultation in the Exploration of Language Variety

Alison Ahern, Applied Languages (University of Limerick)

#### Abstract

Pavement? Footpath? Sidewalk? Which one should an English learner use? These specific differences belong to diverse *language varieties* of English. However, variety is not just applicable to the English language, but all other languages. Did you know that the French language is predicted to be the world's most commonly spoken language by 2050 due to sub-Saharan population growth? Most French language learners today study Standard French – the dialect spoken in mainland France. However, how can they effectively communicate with speakers of other varieties? This research project aims to show how effective corpus consultation can be for third level language students when exploring such language variety - Canadian French in particular. A *corpus* is a body of text, which in this case, can be maximally representative of a certain variety of a language. It can be manipulated and searched in order to draw conclusions such as the frequencies of words, or certain characteristics of specific varieties. The project involves mixed-method research of Standard French and Canadian French corpora in order to underline certain lexical and grammatical differences between the two dialects. It also used survey-based research in order to gather information about student perceptions of the use of corpora when learning about or becoming aware of language variety differences. The findings have shown that although students are keen to learn different varieties during their studies, the subject is rarely approached. However, they also show that students are willing to consult corpora in order to embark in autonomous learning of language variety.

### Machismo Masculinity: Negative Effects of Hyper Masculinity and Hyper Femininity in the Wider Gaming Community

Molly Ahern, New Media and English (University of Limerick)

#### Abstract

It was my aim with this research not to repeat what has been done and examine the examples of representation both men and women were receiving within the gaming community, instead I decided to examine the effects of these extreme and traditional gendered identities had on the players. My research came from a base of thinking that conforming to the traditional masculine role in many videogames created a hostile gaming environment for those who were then being othered by this masculinity.

Research was set into four chapters; the first examined what was represented within the gaming community and examined how many characters conformed to traditional standards of gender. This chapter also



examined which of these qualities those playing the games identified with more, and what drove these players to pick up these games. More importantly this chapter examined the behaviour associated with different genres of games and the forms of gender, in particular masculinity that these presented. The next looked at real life examples of the hostility created by this form of masculinity over a number of events which happened over the past year and a half in the gaming community. The third chapter examined how the gender of the lead character was important when addresses the supporting character. Here an in-depth study of *Resident Evil: Revelations* was used as an example. Lastly, other forms of identification in gaming were examined, from the ability to recreate the protagonist in the player's image to a stronger narrative link which oversees gender.

## Direct Provision System in Ireland: Investigation into Poverty, Social Exclusion and Inequality.

Heidar Al-Hashimi, Family and Community Studies

### Abstract

"I listened to the shooting last night for a long time but one can do no good by sitting at a window breaking one's heart", wrote Cesca Trench on April 28, 1916. While many women in Ireland were averse to combatant participation in the 1916 rising, they could be considered to have a passion for Ireland comparable to prominent and militant figures such as Margaret Skinnider and Constance Markievicz. At this time, the notion of how Ireland should be as an independent nation was being reimagined through culture. In this context, women contributed to the resurgence of an Irish identity, both in the public arena and in their personal writings, which articulated their feelings and concerns for a new Ireland. This minutiae of their minds, preserved in diaries and letters, reveals internal conflicts affecting their self-identity. In my presentation, four of the women discussed are not Irish born, which they considered undesirable, and, as I will show, could be both problematic and beneficial.

Endeavours have been made in this centenary year to recount and foster the involvement of women in various aspects of attaining an Irish Free State. This paper draws on the archives of writings of six women who were connected with, or intently aware of, the events around Easter 1916: Cesca Trench, Rosamund Jacob, Eva Gore-Booth, Constance Markievicz, Margaret Skinnider and Kathleen Clarke. This study contributes to the ongoing discussion of women's identities and the complexities of nationality in Ireland.



## Women, War and Writing in 1916: Complexities of National Identity

Colleen Ballard, BA Joint Honours (University of Limerick)

### Abstract

“I listened to the shooting last night for a long time but one can do no good by sitting at a window breaking one’s heart”, wrote Cesca Trench on April 28, 1916. While many women in Ireland were averse to combatant participation in the 1916 rising, they could be considered to have a passion for Ireland comparable to prominent and militant figures such as Margaret Skinnider and Constance Markievicz. At this time, the notion of how Ireland should be as an independent nation was being reimagined through culture. In this context, women contributed to the resurgence of an Irish identity, both in the public arena and in their personal writings, which articulated their feelings and concerns for a new Ireland. This minutiae of their minds, preserved in diaries and letters, reveals internal conflicts affecting their self-identity. In my presentation, four of the women discussed are not Irish born, which they considered undesirable, and, as I will show, could be both problematic and beneficial.

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## Self-perception and Self-representation in Twitter Biographies

Sarah Caulfield, Applied Languages (University of Limerick)

### Abstract

Social media has evolved dramatically in recent years, becoming central in contemporary culture, and, likewise, Twitter has grown to play a huge part in the lives of many; in particular, young people. With emerging tendencies among this group to present themselves through online personas, often different from their “real life” or offline selves, it is important to study how young people portray themselves online, using 160-character Twitter biographies as an example. The aim was therefore to investigate 18-25-year-old students’ Twitter biographies, using discourse analysis, and comparing these with the students’ own self-perceptions. Qualitative data was collected, from 26 participants, who completed an online survey, giving 25-words-or-less descriptions of themselves, their Twitter biographies, and finally their thoughts on self-perception and self-representation in Twitter biographies. The descriptions and biographies are being analysed and compared, using discourse analysis. Initial findings show varying styles of biography (professional, humorous, mysterious, descriptive), include a total of 5 languages, and identity-based content which tends to include professions, interests, humour, areas of study, but also references to relationships and sexuality. The descriptions are generally more serious, with more negative traits, often more honest, although



some biographies showed users were actually more honest and upfront online than in reality. All of this suggests that there are indeed differences in self-perception, and self-representation in Twitter biographies. The results show how young people often behave differently online, putting forward a more positive, entertaining version of themselves, and holding back other details, while others see social media as an opportunity to be more open and express themselves more freely than they might dare to offline. It is important to be aware of these differences in online and offline representations of the self, but also the differing attitudes towards online self-representation, as users can create exaggerated, or more flattering personas when given a 160-character online space, publicly available to potentially anyone, on a website on which having 'followers' plays a huge role.

## The Constitutionality of Gender Quotas

Emmet Clarke, Law Plus (University of Limerick)

### Abstract

The Electoral (Amendment) (Political Funding) Act 2012 was enacted with the purpose of securing 30% female candidates at minimum for each political party in the upcoming General Election. The legislation is designed to eliminate barriers of a political nature in their constituency.

The article will closely analyse the results of the Mohan and Ireland case and the implications of Mr Justice Keanes ruling at a Constitutional level regarding freedom of association and the idea of equality as determined in Quinns Supermarkets and the Attorney General case and how that impacts on an individual seeking to prove locus standi and also the party itself.

The controversy at parties grass roots level will be discussed and the notion of simplistic democracy.

The article will discuss the history of gender quotas, their need, European comparators and Substantive, Formal and positive equality approaches.

## Higher Educations Engagement of Students Using Social Media

Chris Collins and Cian Conboy, Politics and Public Administration (University of Limerick)

### Abstract

**Background/Purpose:** This research began as a way to find new means of communication between the students of UL and the Careers Service. Social Media was chosen as the platform as students spend 8 to 10 hours on a cell phone daily. The ubiquity of social media is a microcosm at a university due to the demographic.



**Aim/Objective:** The objective is to conduct an empirical, qualitative of the use of social media in higher education's engagement of students.

**Methods:** A review of the literature was performed in October and November Of 2015. The following specialised data-base sources were systematically searched: Science Direct, UL Library, and Google Scholar. An example of search words and phrases used: social media, web 2.0, social media in higher education sector, social media benchmark, social media benchmark higher education, educational use of social media. The "snowball" method of using the most recent works to find relevant articles cited in them provided additional articles. Since keywords in research articles are not based on common lists it is highly likely that some of the literature was missed.

**Results/Conclusions:** "We don't have a choice on whether we do social media; the question is how well we do it" (Qualman, E.). This is reflected in the growth of UL Careers Service Facebook page, from a weekly reach of 1,500 to over 20,000. This has been driven by an increase in educational material, relevant jobs opportunities, information on support services provided by UL Careers Services and much more. Therefore it is possible to conclude that social media can be used as an educational tool within the higher education sector.

## **An Investigation into the Impact of Lower Limb Muscle Strength on Back Pain in Rowers**

Aoife Cooper, Physiotherapy (University of Limerick)

### **Abstract**

**Background:** Rowers have a high incidence and prevalence of back pain. Risk factors, which may predispose rowers to back pain, have been researched extensively e.g. training intensity, ergometer training and lumbar spine flexibility. However, the effect of lower limb strength on back pain in rowers has yet to be investigated.

**Objectives:** To determine the relationship between hamstring, gluteus medius, quadriceps strength, and back pain in both a rowing and non-rowing population.

**Methods:** 8 rowers and 11 non-rowers were recruited. Strength of gluteus medius, quadriceps and hamstrings was measured using a hand-held dynamometer. Back pain was measured using the NRS and the Oswestry disability index.

**Results:** Non-rowers demonstrated a difference in distribution of strength across the three muscle groups ( $P=0.013$ ) and a significant difference between quadriceps and gluteal strength ( $P=0.003$ ). A near statistically significant difference between hamstring and quadriceps strength was observed in the rower group ( $P=0.069$ ). A weak positive correlation between strength discrepancy and numerical rating scale, as well as strength discrepancy and Oswestry disability index in the rower group ( $r= 0.362$  and  $0.352$  respectively) was



observed. A weak negative correlation was seen for the same measures in the non-rower group ( $r=-0.161$  and  $-0.306$  respectively).

Conclusions: Rowers demonstrated a larger difference between hamstrings and quadriceps strength than the non-rower group. This is consistent with existing literature. Strength discrepancy has a weak correlation with back pain measures, Oswestry disability index and NRS, in both groups. A key finding is that rowers have atypical muscle strength discrepancies between muscle groups than non-rowers.

## Is Seeing Believing? – Simulation of Atomic-Resolution Electron Microscopy Images

Eileen Courtney, Applied Physics (University of Limerick)

### Abstract

Transmission electron microscopy (TEM) has been an indispensable tool for the development of today's materials and their roles spanning the application range from construction to electronics, from catalysis to biomedicine, from nuclear reactors to photovoltaics. TEM allows us to study a material at an atomic level, observing characteristic patterns within the material, as well as defects in the structure. Without TEM; today's advances in modern aircraft or computing and IT facilities would not have been possible. Nano-electronics would not be on the scene since it requires an understanding of the structure of materials on the atomic scale. In the most recent 2-D materials development (graphene) TEM has been an essential tool to show that the claim of having obtained a one-atom thick materials sheet was indeed true, and furthermore, what this material looks like on the atomic scale. Atomic resolution TEM images are, however, not always directly interpretable and require support via image simulation. (For example, depending on the focusing conditions, atoms can appear as bright OR dark blobs- in order to identify and precisely locate atoms, comparison with image simulation is essential.) In this project, TEM simulation software was employed to calculate atomic resolution images of 2-D materials: graphene, and new-on-the-scene 2-D transition metal dichalcogenides, obtained under conditions with defined imaging parameters. This requires an understanding of the TEM image formation process. Furthermore, simulated images were compared with images obtained experimentally.

## The Representation of the Campaign for the Recognition of Irish Sign Language as a Language Ideological Debate on Facebook and Twitter

Robyn Cunneen, Applied Languages (University of Limerick)

### Abstract

In the past, ideologies of many spoken languages have been investigated, not to mention spoken minority languages. This project aims to occupy a possible gap in the research that has been done in relation to



language ideology by examining a minority language that is used by the deaf community of Ireland- Irish Sign Language (ISL). An investigation into the representation of the campaign for the recognition of Irish Sign Language as a language ideological debate on Facebook and Twitter was carried out. In other words, how the arguments of the deaf community regarding the stance of ISL are being represented on these sites. The methods adopted in the investigation include a corpus- based discourse analysis of Facebook posts and comments from the official page and tweets containing '#ISL4ALL'. Furthermore, an interview with Mr. Eddie Redmond, CEO of the Irish Deaf Society, was carried out in order to get an insight into the campaign from the perspective of a deaf campaigner. The project begins by providing contextual information regarding ISL and the deaf community and leads into a discussion of previous research in the fields of language ideology and language ideological debates. Following the analysis, it was found that the campaign is represented on the aforementioned social media sites as one which is concerned with promotion, heightening awareness and gathering support, while the interview exposed an ideology of sign language as a “real language” rather than a “compensatory tool” and the demand for equality.

## Explicit Stigma and Endorsement of Attributes in Primary School Children towards Peers with Autism or Depression

Brónagh Donohoe, Psychology (University College Dublin)

### Abstract

**Aim:** The aim of the study was to investigate if primary school children, between the ages of 7-12, would display explicit negative attitudes and stigma towards hypothetical peers with a psychological disorder in comparison to a hypothetical peer with no mental health or developmental problems. It was the aim to see if there was a difference in stigmatization based on the participant's age and gender. **Method:** Participants were 101 primary school children with an age range of 7-12 years ( $M= 9.91$  years;  $SD= 1.53$ ). The gender distribution of the sample was 52.5% female ( $n=53$ ) to 47.5% male ( $n=48$ ). Participants were recruited from second to sixth class in Farnham National School, Co. Cavan. Participants listened as the researcher read out three vignettes about three hypothetical peers, one with Autism, one with depression, and one in relation to a typically developing child. Participants then filled out the Attribution Questionnaire (AQ-8-C) in response to each vignette. **Results:** Hypothesis one, which stated that males and females would differ in terms of the attributes they endorsed towards the subjects in the vignettes, was partially supported, with significant interactions between the gender of the participant and the endorsement of the attributes pity, fear and avoidance being noted. Hypothesis two, which stated that younger and older students would differ in terms of the attributes they endorsed towards the subjects in the vignettes, was not supported. **Discussion:** Results were discussed in relation to 1) previous literature, which questioned the validity of Weiner's Attribution Theory (1986) in relation to this research project, 2) practical implications with regards to developing and implementing interventions to prevent peer stigmatization, 3) methodological issues, with a weakness being



the use of single-item measures leading to potential bias, and 4) future research, which emphasized the importance of measuring implicit attitudes in the future.

## **A Corpus-Based Discourse Analysis of Male and Female Dialogue in “A Game of Thrones”**

Ava Dooley, Applied Languages (University of Limerick)

### **Abstract**

The aim of this study is to use empirical data to show the differences between male and female dialogue in fiction, and to discuss whether it is in line with current research involving real-life gendered dialogue. To do this, the study analyses the discourse in *A Game of Thrones* by George R.R. Martin, a novel of the fantasy genre, which has been a relatively ignored literary genre until recently. The discourse specifically examined is male and female dialogue. The dialogue from the book is examined using a quantitative method, wherein samples of spoken dialogue from three male characters and three female characters are made into two separate corpora, with two corpora of approximately 3,000 words for each gender. The results of the analysis of the corpora are ultimately discussed and compared to determine whether there is a difference in the style of male and female dialogue in this work of fiction. The results are also examined to see if these examples of fictional dialogue follow the same patterns as real-life gendered dialogue. As literature can serve as a valuable “mirror” society, it is interesting to see what is reflected in a fictional work of such popularity as *A Game of Thrones*. Pre-existing research and theories regarding real-life male and female speech by authors such as Lakoff, Eckert and McConnell-Ginet are applied to this study. Aspects of language discussed in this paper include differences in the level of politeness used by characters, and the pronouns employed by the genders.

## **Developing and Implementing a Framework for Objective Evaluation and Engagement of Consultancy for Large Supply Chain Management Projects**

Dan Duffy, Supply Chain Management (University of Limerick)

### **Abstract**

Manufacturing organizations frequently undertake large, cross-functional or even cross-organizational supply chain management projects in order to create or maintain competitive advantage. Such complex projects require the engagement of various external and diverse consultancies with different levels of cost and specialization, yet considering the financial and strategic implications regarding hiring consultancy, organizations frequently do not have a framework for their engagement.

This research paper hypothesises that consultancy can be utilized more effectively for large, capital-intensive projects, by the use of a standardized framework. The author creates and implements such a framework,



whereby the approach for engagement of a consultancy is based on their cost. The framework also utilizes a number of evaluation tools to complement objective decision making.

This paper uses both qualitative and quantitative research to demonstrate that objective pre and post evaluation tools can contribute to greater project success. It also demonstrates how a developed framework can be introduced to the organization. While the opportunity was not presented to implement the framework in a live environment, it was evaluated using a focus group. The research paper demonstrates that such a framework and accompanying evaluation approaches can increase the effectiveness of engaged consultancies in large supply chain management projects. Such a framework can also introduce an awareness of objectivity regarding the engagement of consultancy, to an organization's culture.

## Privacy Concerns on Facebook: The Social and the Institutional

Orla Gallagher, Psychology and Sociology (University of Limerick)

### Abstract

Past research has identified a significant disparity between social media users', for example Facebook users', expressions of concern for online privacy, and the implementation of effective strategies to address these. However, past studies have focused primarily on social privacy concerns, such as the viewing of personal information by employers, neglecting institutional privacy concerns, such as the potential misuse of personal information by corporations. By also incorporating institutional privacy concerns, this study aimed to investigate the potential effect of different types of Facebook privacy concerns on one's intentions to engage with various privacy protection strategies, as well as general concern for online privacy and concern for various unwanted audiences. Participants ( $N=204$ ) were randomly presented with one of three fabricated media stories, which allocated them into one of three possible conditions, namely (1) the social privacy concern condition, (2) the institutional privacy concern condition or (3) the control condition. Upon reading their assigned media story, participants completed scale measures of intentions to engage with various privacy protection strategies, general concern for online privacy and concern for various unwanted audiences. One-Way ANOVAs will be used to determine if different types of privacy concerns have an effect on one's intentions to engage in different types of privacy protection strategies, as well as general concern for online privacy and concern for various unwanted audiences. Such results, through explicitly comparing social and institutional privacy, would greatly build upon existing literature on the topic, whilst also deepening our understanding of how social media is engaged with today.



## The Future of Work

Yeliz Genc, Digital Media Design (University of Limerick)

### Abstract

This research presents the possibilities that surround the future of work at the intersection of digital technologies, social class and the economy.

A collection of speculative devices has been developed, these include a futuristic digital employment application, a wearable and an assisting product which acts as a coping aid for employees to deal with the ruthless requirements deployed in the future scenarios. Each of these devices exist within a scenario of the proletariat, working class and a bourgeoisie, dominant class, as inspired from the connecting research thesis. The thesis connected explores the Industrial Revolution and the associated theories developed during this time by Karl Marx and Friedrich Engels. More so it conceptualizes, the rise of the digital economy, relating to advancements in information technology and its contribution within the capitalism system.

Finally, a video prototype depicts a scenario illustrating how this system of devices will work in a possible future that favours the bourgeoisie. The aim of this research is to raise critical questions about the role of technology in the future of work.

## The Role of Resilience in Predicting Subjective Well-Being in Emerging Adulthood

Dearbhla Gibbons, Psychology (University College Dublin)

### Abstract

**Aim:** The importance of resilience in the area of youth mental health is emphasized due to the prevalence of mental ill-health. It is understood that the ability to 'bounce back' from stresses and adversities is invaluable, although it is yet to be determined whether one's resilience is accountable for by environment or due to genetic inheritance. What is known, however, is that there are factors that may either ignite or undermine resilience. The present study aims to investigate the role of stress as a factor that may undermine resilience, and lessen the effect it may have on subjective well-being.

**Method:** A sample of Irish emerging adults, aged 18 to 25 (n= 120) were surveyed to investigate the predictive effect of stress on resilience, as well as the relationship between resilience and subjective well-being and how stress may act in a way that would affect this interaction. Respondents were recruited through means of a convenience sampling method using social media.

**Results:** Analyses revealed that stress was not a significant predictor of resilience, while resilience was a positive predictor of subjective well-being. The level of stress did not significantly affect the relationship between



resilience and subjective well-being; at all stress levels, the relationship between resilience and subjective well-being remained positive.

Discussion: Findings were discussed in relation to methodological issues in the present study, as well as practical implications, such as the implementation of resilience building for young people at risk.

## **The Use of Software Applications to Provide Students with an Immersive Irish Language Education**

Peadar Harvey, Design Technology Education (Galway and Mayo Institute of Technology)

### **Abstract**

The world of education is changing around us. Many students who once walked to school with books in their bags now travel simply with a computer, and parents around the country ask their children: “Did you charge your tablet?” before going to bed at night. With the availability of this technology comes great opportunity. As teachers, we have the responsibility to adapt to the evolving culture in which we live in.

This paper proposes to research the psychology and pedagogy of teaching, taking theories from all main paradigms and develops a cross-platform software application for students studying Technical Graphics through the medium of Irish. This application is then tested in a secondary school environment, where it will be critically evaluated, and recommendations will be made to improve the current application in order to further develop the application.

The preliminary findings show that students responded extremely well to the application. Teachers interviewed outlined the need for such a platform as it provides an open source and cost effective distribution method of resources through the medium of Irish, which currently does not exist. Through research and testing it was found that Technical Graphics resources were not available to students and teacher’s studying and teaching through Irish. The decision was made to make the application free and open source, where a community of users, in this case teachers, can collaborate to develop and distribute the resource or software. The author is designing and creating an online portal to enable this community approach.

## **A Study of Pre-Service Teacher Capacity to Support Adolescent Mental Health in the School Setting**

Aoife Heeran, Materials and Engineering Technology, Savannah Cowman, Biological Science and Kevin O’Neill, Materials and Architectural Technology (University of Limerick)

### **Abstract**

The aim of this study was to explore the capacity of pre service teachers to support the mental health of students in a school/classroom setting. Participants (N = 202) completed a survey that examined their perception of the role of the teacher in relation to mental health issues as well as their confidence in identifying and managing issues of mental health. In addition 12 qualitative interviews were conducted with



school personnel to identify key areas that initial teacher education (ITE) programmes should focus on in the development of teacher capacity to better support students in areas related to mental health. Findings indicated that student teachers agreed they had an important role in identifying and referring students for mental health issues but that they were not confident in filling that role due to a lack of preparation on their ITE programme. Further to this, analysis of interviews with school personnel a number outlined a number of key areas for better preparation of pre service to cope with mental health issues in the school setting. The findings of this study have implications for the ongoing development and implementation of ITE programmes in Ireland.

## **A Qualitative Exploration of Student Experiences of Learning in Lessons Facilitated Using an Online Collaborative Learning Environment.**

David Hogan, Materials and Architectural Technology (University of Limerick)

### **Abstract**

The literature which informed this research derived from: theory on the effectiveness of different teaching styles, literature on ICT and Technology in schools, the potential for collaborative problem solving in education, how to successfully implement technology into our classrooms and finally online environments that support and promote collaborative learning and the effects it has on teaching and learning

This aim of the research was to explore student's experiences of learning in lessons facilitated using the online Edmodo learning environment. Students compared these experiences to a normal teacher lead classroom environment. The research trial ran for 10 weeks. 5 students took part in the research. Ethical approval for the study was sought and approved by the faculty of Science and Engineering in the University of Limerick.

The results of the research stem from the data on the students Edmodo profiles, also focus groups were conducted with the students after the 10 weeks. Result indicate that the students in this sample had more pride in their work when using the online collaborative learning environment, a greater attention to detail when completing work, were more interested in helping others with their work and expressed a willingness to constantly improve upon their own work. They also suggested they enjoyed learning more when using the Edmodo platform. The findings from this research indicate that further investigation in the Irish context may provide some valuable insights.



## **Drawing as a Stress Reliever? Effects on Perceived Stress and Cardiovascular Measures**

Katarina Keogh, Psychology and Sociology (University of Limerick)

### **Abstract**

**Background/Purpose:** Despite suggestions that creative activities (e.g. drawing, colouring) can be beneficial for well-being, few studies have tested this empirically. While there are suggestions that creative activities could result in stress relief, the literature remains sparse. It has also been suggested that the experience of control could be one mechanism by which artistic activities are linked to positive outcomes, but this claim has not been empirically tested.

**Aim/Objective:** This study tests whether creative activities involving different levels of creative control influence physiological stress recovery and participants' perceived stress following exposure to a stressor.

**Methods:** Students completed an arithmetic stress task, and were then randomly assigned to one of three ten-minute exercises: Free form drawing (full creative control), colouring pre-drawn shapes (limited creative control) or copying a text (control condition). Cardiovascular measures were recorded throughout (using a Dinamap monitor), and perceived stress was assessed using a visual analogue scale. Information on typical creative activities and task enjoyment was also collected.

**Results/Conclusions:** A one-way ANOVA will be used to analyse the effect of creative control on perceived stress and physiological stress markers. This study will shed light on the usefulness of utilizing creative activities in times of stress in non-clinical samples. Results will further allow for analysis of the impact creative control holds in the relationship between creative activities and stress. The findings will advance limited theoretical work on the benefits of artistic activities and art therapy.

## **To Explore Teachers Perspectives on Junior Cycle Reform (in particular assessment) in Terms of How They Perceive it intersects with Issues Pertaining to Teacher Professionalism**

Eamonn Kiely, Materials and Architectural Technology (University of Limerick)

### **Abstract**

My research involves investigating teacher resistance to formal assessment of their own pupils. In particular how it interacts with how they perceive themselves as a profession and how it coheres with teacher professional agency.



This project will provide deeper understanding of the debate that has had huge media air time nationally in the past year. It will give teachers a space to articulate their deeply held beliefs with regard to formal assessment of their pupils. In the recent media debates it has been difficult to decipher exactly what is the core of the issue for teachers' resistance to formally assessing their pupils and it is hoped to uncover this.

## **The Health Benefits of Social Support and the Role of Perceived Control among People who have Experience of Suicide**

Tessa Kingston, Psychology and Sociology (University of Limerick)

### **Abstract**

Studies show that a person's experience of social connectedness and social support plays an important role in their health. In addition, recent studies suggest social support is linked to stronger perceptions of control which has many health benefits. The purpose of this study is to investigate the relationship between social connectedness, social support and general health outcomes. Perceptions of control and group identification are addressed as possible mediating players in this relationship.

Participants (N=1,595) completed an online survey after participating in Pieta's House's 'Darkness in Light' run. The survey measured social connectedness, social support, perceptions of control, identification with the crowd and general health. A Pearson correlation analysis showed a strong positive relationship between social connectedness and general health. A multiple regression will be conducted to see if social connectedness and social support predict positive health outcomes. A simple mediation analysis will be conducted to examine associations between social connectedness and general health with the possible mediation of control. An ANOVA will be conducted to measure gender differences in this model, as well as differences between having experienced a death by suicide or not.

The results will be discussed in light to research linking social connectedness and social support to health outcomes. It will also address areas of research on suicide prevention and the possible effects of a strong sense of perceived control.

## **The Effects of Urbanization on the Cultural Identity of Indigenous peoples in Chile: A Study of the Mapuche Community**

Rachel Lehane, Applied Languages (University of Limerick)

### **Abstract**

Research on the effects of urbanisation amongst indigenous populations has shown that rapid social change and acculturation pressure can have a negative impact on the cultural identity and wellbeing of indigenous groups, particularly youth. However, despite the continuous encroachment of urban Chilean culture into



Mapuche way of life, to date, no study has examined cultural identity and wellbeing among Mapuche youth. In an attempt to address this gap in the current literature, the present study aims to examine: (i) the strength of indigenous cultural identity among a group of Mapuche youth, (ii) their perception of the influence of urbanisation on Mapuche culture and identity, and finally, (iii) whether stronger cultural group identification is associated with better overall psychological wellbeing.

Participants were recruited via Chilean and Mapuche Facebook groups. With the permission of the group administrator, a link was posted in each group inviting those of Mapuche descent to take part in an online survey. Participants were required to be between 18 and 25 years of age and be proficient in Spanish. The survey measures used included the Collective Self-Esteem Scale, Identity and Wellbeing Scale, and Satisfaction with Life Scale in addition to an open-ended question on urbanisation and Mapuche culture.

Results are presented and discussed in the context of the socio-historical development of Mapuche culture. The paper ends with a discussion of the challenges when conducting research on indigenous groups and suggested directions for future research.

## Language and gender in Disney

Mairéad Long, Applied Languages (University of Limerick)

### Abstract

There has been much investigation into how Disney animated characters appear, and how it may affect the body image of young children. We propose that the language used by these characters could influence how children view gender roles and what behaviour is expected of them by society, which is just as important an investigation as the aforementioned. Thus, this quantitative study of language and gender in Disney aims to examine how character portrayal is influenced by 'male' and 'female' language, and how language use in Disney animated films has changed over time. The study was carried out using a corpus and concordancing software, with the scripts of six animated Disney films released from 1937 to 2013 being the chosen subjects. Drawing on popular language and gender and language in the media theories, this paper gives an overview of these two academic areas before discussing the methodology used for the aforementioned investigation. The results are then presented and discussed in depth in relation to the above aims. These results showed that language use in Disney films, while overall corresponding to previous research in language and gender studies, in some instances was contrary to said research, and that language use has indeed changed over time. We can deduce from the variations in language use that language and gender is an important tool in constructing characters, the use of which, however, has evolved through decades of film production.



## The Impact of Positive Emotional Regulation on Physical and Psychological Well-Being

Christine MacNamara, Psychology and Sociology (University of Limerick)

### Abstract

**Background:** Studies have demonstrated that the manner in which individuals regulate negative emotions is associated with well-being. For example, individuals vary in the extent to which they ruminate (or dwell) on negative events. However, there has been little research done to examine how differences in regulation of *positive* emotions might also be important for health. The “Broaden Built Theory” demonstrates savouring and dampening strategies as having different effects on individuals.

**Aims:** The purpose of this study is to investigate links between positive emotion regulation strategies and wellbeing (physical and psychological).

**Methods:** As part of a larger study, blood pressure and heart rate measures were assessed in a sample of young adults (18-25 years). Participants completed psychometric measures including the positive emotion subscale of the Emotion Regulation Profile-Revised and the WBQ-12.

**Results and Conclusions:** Multiple regression analyses will be conducted to examine associations between positive emotion regulation strategies and health outcomes (resting blood pressure, heart rate, and psychometrically-assessed psychological well-being). The results will complement previous research on negative emotion regulation by identifying the potential importance of positive emotion regulation strategies for well-being.

## The Effect of conservative Interventions for Low Back Pain (LBP) in the Nursing Population: A Systematic Review

Danielle Malone, Physiotherapy (University of Limerick)

### Abstract

**Objectives:** Nurses are exposed to factors increasing their risk of developing LBP. Such factors are proposed to be of an ergonomic and psychosocial nature. This review aims to determine the effectiveness of conservative interventions in the prevention/treatment of LBP in nurses. It aims to update the review by Dawson *et al.* (2007).



**Methods:** The PubMed database was systematically searched. Randomised Controlled Trials (RCT) published since 2004, regarding the nursing population were eligible for inclusion. All interventions, other than surgical intervention, aiming to treat/prevent LBP were included. All outcomes assessing LBP such as pain, disability etc. was accepted. Papers were analysed by one reviewer. An adaptation of the Cochrane Back Collaboration Appraisal Tool was used to determine the quality of the evidence.

**Results:** 8 papers were eligible of which 6 showed positive effects in favour of the intervention-group. Interventions analysed included ergonomic intervention, a multi-dimensional-approach, lumbar-supports, myofascial release and stretching. The use of lumbar supports, myofascial-release and stretching showed improvements in pain and disability. The effect-sizes tended to be small and similar across interventions. Larger effect-sizes were evident following a multi-dimensional intervention. Methodological Quality was scored out of 12; if a paper scored 4.5/6 or greater on the Internal Validity aspect and scored 9/12 in total, it was deemed “high-quality”. Only three papers were “high quality”.

**Conclusion:** No conclusive evidence was found in the review in favour or against any specific intervention for the treatment/prevention of LBP in nurses. However, moderate evidence was found in favour of adopting a multi-dimensional approach.

## **It’s Not What You Say, It’s The Way That You Say It: In-Group Identification and Linguistic Intergroup Bias**

Nicole McGowan, Psychology (University of Limerick)

### **Abstract**

Previous research shows support for linguistic intergroup bias (LIB). LIB describes people’s tendency to communicate positive in-group behaviours more abstractly and negative behaviours more concretely. This study investigates the mediating effect of level of in-group identification on this linguistic intergroup bias. Twenty University of Limerick (UL) students were taken as participants for this study. They indicated their level of identification as a UL student with a 14 item scale. They then proceeded to describe a series of 10 photographs depicting fellow students engaging in either positive or negative behaviours. Their responses were coded for the level of abstraction of language using Semin and Fiedler’s linguistic category model. An ANCOVA will be carried out to examine the mediating effect of level of identification on participant’s use of abstract language, and therefore use of LIB. The results will be discussed with regard to the use of LIB as a model of stereotype maintenance.

## **The Influence of Lockean Philosophy on Daniel Defoe’s Robinson Crusoe**

Aoife McInerney, Liberal Arts (Mary Immaculate College)

### **Abstract**



Robinson Crusoe is credited with being the first novel ever written, and it merits close examination as in this ordinary text, one finds the origins of contemporary politics naturalised in narrative form. This project aims to bring two seminal works of the seventeenth and eighteenth-century, Defoe's Robinson Crusoe and John Locke's Two Treatises of Government, into dialogue with one another. The research question is as follows: does an understanding of Lockean Philosophical discourse enhance one's reading of Robinson Crusoe?

This research was undertaken through the development of key themes: the concept of patriarchy, the role of property and the formation of civilisation. Modern and coetaneous authors whose contributions impacted both the literary and philosophical disciplines were used to form the foundation of this project as each author offered a unique interpretation of Robinson Crusoe in light of Locke's philosophy. This project attempted to bring each of these perspectives together in order to provide the reader with an enhanced understanding of both the novel and contemporary politics.

The connection between the work of John Locke and Daniel Defoe suggests that the novel genre and adventure story enable the reader to get a concrete and experiential grasp on certain ideas or theories. The findings indicate that many of the concepts contained in the novel can be traced to the thinking of John Locke. What the reader gains from a knowledge of Lockean philosophy is a perspective on the novel that would not otherwise be achieved, along with a deeper knowledge on the origins of political society.

## **Cardiovascular Reactivity: Are Negative Life Events and Loneliness impacting your Cardiovascular Health?**

Grace McMahon, Psychology and Sociology (University of Limerick)

### **Abstract**

**Background:** Previous research shows that loneliness and negative life events are contributing factors to cardiovascular disease through health behaviours, psychological strains and stress reactivity. However, these studies have tended to examine the impact of loneliness and life events on cardiovascular health separately. To date, no study has examined the interaction of both loneliness and negative life events on cardiovascular health which is the aim of the present study.

**Methods:** Students from the University of Limerick completed measures of loneliness and negative life events directed towards students, and had their blood pressure continuously monitored throughout a standard stress testing protocol which included a baseline and an acute stress session.

**Results:** Data collection will be completed by end of February and it is expected that negative life events will be associated with attenuation in blood pressure reactions to stress, and that the addition of loneliness to negative life events will exacerbate this attenuation and contribute to a blunted cardiovascular stress reactivity.



Conclusion: It is hoped that these results will contribute to previous literature on loneliness and negative life events as contributing factors to cardiovascular health.

## The effect of Nature on Sustained Attention: Exploring the impact of Colour and Nature Relatedness

Andrea Moore, Psychology (University of Limerick)

### Abstract

Previous research has shown that viewing scenes of nature can boost sustained attention. This study aims to expand on such research by examining colour as a possible explanation. An individual's connection to nature is also explored as a potential moderating variable. Participants (n=60) completed the Sustained Attention to Response Task (SART). They were then exposed to one of three images for a 40-second period. In the first condition, participants viewed an urban scene; in the second, they viewed a nature scene; and in the third, a nature scene filtered in black and white. The participants completed the SART once again, and were then asked to complete the Nature Relatedness Scale, which is used to measure feelings of connection to nature. A two-way ANOVA will be conducted to examine the effect of both scene viewed and connection to nature on sustained attention. Any interaction effects of the independent variables will also be examined. The results will allow greater understanding of the phenomenon at hand. Real-world applications of such research in educational and other settings will be discussed.

## The Experience of Irish Traditional Musicians in Germany

Felix Morgenstern, Irish Music and Dance (University of Limerick)

### Abstract

My undergraduate thesis, "The Experience of Irish Traditional Musicians in Germany" is an investigation of the factors informing the perception and performance of Irish Music by German-born practitioners. Germany, a major marketing circuit for Irish culture, has also brought a thriving scene of Irish Music enthusiasts to the fore. Being an Irish Traditional musician from Berlin, my research interest in this area is largely fuelled by my own involvement within this community and by my decision to move to Ireland to study music.

Throughout the summer of 2015, I conducted ethnographic interviews with musicians based in three regions of Germany and I met informants who have all dealt with Irish Traditional Music on amateur or professional levels. I aimed at acquiring insights into their views on aspects of music and identity, nationalism and authenticity, subsequently drawing upon core texts in Irish and Folk music studies to further engage the outcomes.



My research has led me to investigate the role of Folk music in Ireland and Germany, particularly in informing Cultural Nationalism. Recently corresponding with a German musicologist allowed me to trace the popularity of Irish music in Germany within a historical framework. Furthermore, several informants were drawn to the participatory characteristics of Irish music, an outcome that made me consider various approaches to the discourse on music in its social context. Regarding the terms 'ethnicity, identity and authenticity' in music, I am currently evaluating the different meanings they evoke for my informants.

## **Energy Methods for the Estimation of Additively Manufactured Metal Fatigue Performance**

Ben Morrissey, Aeronautical Engineering (University of Limerick)

### **Abstract**

Three Dimensional printing, or additive manufacturing (AM) as it is known in industry, is becoming ever more popular due to the ability to create complex shapes, reduce lead times and allow design free from manufacturing limitations. For these reasons, it is seeing substantial use in the aerospace and biomedical engineering sectors. Although knowledge about AM parts is well-understood in terms of static mechanical properties (e.g. yield strength), there is a lack of knowledge and research into the fatigue behaviour of these parts (the behaviour of materials subject to loading and unloading cycles – behaviour which is experienced by a large majority of parts).

Metallic material subjected to cyclic loading produce stress-strain hysteresis loops, the area of these loops can be used to determine the response of the material. This research is examining the connection between the stress-strain loops of additively manufactured titanium (Ti-6Al-4V) with fatigue performance and how this differs to conventionally produced material.

Following analysis of fatigue test data in the form of stress-strain graphs, a material model was implemented and calibrated using the available data and subsequently simulated using finite element analysis (a mathematical approach to calculating how material reacts to external forces). Using the FEA software, simulated stress-strain graphs were produced which closely approximated the physical test graphs. A programming script was written which calculated the area of these loops, with the aim of inputting data into a number of fatigue models. This would allow the effective estimation of the fatigue life without the need for expensive testing.

## **The Influence of the YouTube Beauty Community on young women**

Emma Mullane, New media and English (University of Limerick)

### **Abstract**



There has been a significant amount of research carried out on the effects media and the Beauty Industry has on women. While old media is still imperative, it's clear that social media is significant as it becomes more integrated into everyday life. Yet there is a lack of academic research on the effects it has on its users and whether or not it has a similar influence to mainstream media. My presentation focuses on the impact of YouTube and its most popular content creators and how they influence young female viewers. It discusses the influence of Beauty "Youtubers" i.e. Videos in which the main topic is beauty – related and features one main person in the YouTube channel. I will first discuss existing research on the influence of celebrity figures and women's role models, the Beauty Industry and social media as well as YouTube's position as an online marketplace. From this research, I carried out a mixed method approach of primary research in order to gather more information on this new form of celebrity culture, why it has become so prominent and how it affects women. The results indicated that Beauty YouTubers influence their female audiences in a number of ways. Areas included self – image and spending habits as well as how they viewed YouTube celebrities in relation to mainstream celebrities and what differentiated them. Results also give an insight into the influence of social media and the relevance of old media verses new media.

## Examining the efficacy of Instructed Language Acquisition versus Natural Language Acquisition

Eimear Murphy, Applied Languages (University of Limerick)

### Abstract

The aim of this research project is to examine the efficacy of two diverse language learning methods namely Instructed Language Acquisition and Natural Language Acquisition. Researchers have proven that a second language (L2) can be learned in numerous contexts including a) a formal classroom setting and b) an informal naturalistic context i.e. in the target country. Thus, this research project will examine the potency of both methods using a comparative approach.

An empirical approach was used for the purpose of data collection. An online survey was created as a preliminary data collection method and used to identify groups of respondents interested in this subject area. Of these 23 respondents, 7 students attended a follow-up focus group session which allowed the researcher gain an in-depth understanding of students' views on the topic. Data obtained from the focus group were analysed using thematic analysis to elicit themes, trends and patterns to formulate a conclusion. Quantitative and qualitative data obtained from the surveys were analysed and represented using bar charts.

Findings show that once students had a good grasp of grammar, language learning was easier, while living in the target country proved most helpful for acquisition. Although the majority of students were in favour of visiting the target country and thus acquiring the language naturally, researchers argue that a certain grammatical base structure is needed first in order to attain L2 competence. It is suggested, therefore, that



although complete immersion is hugely beneficial for L2 learning, instructed language acquisition should take place first.

## The Effect of Thought Suppression on Contingency Learning: Implications for Depressive Realism

Eoin O'Callaghan, Psychology (University of Limerick)

### Abstract

The perception of instrumental causality is affected by depressed mood. Depression is thought to influence environmental cues used in evaluating instrumentality. In this study, we carried out a causal learning experiment in which we tested the efficacy of a thought manipulation (suppression task) in interfering with participants' ability to appraise a non-contingent relationship. Participants ( $N = 42$ ) were randomly assigned to one of two groups, either simply completing a contingency task, or completing the contingency task while suppressing thoughts of a neutral stimulus. The contingency task contained two conditions in which the outcomes occurred with low (25%) or high (75%) frequency and participants rated the control of an action and the context on the outcome. Results showed that judgements of control depended on whether the action or context control was being rated and varied with outcome frequency. Perception of control was not influenced by concurrent thought suppression activity. These findings are discussed in relation to contingency learning research and depressive realism.

Keywords: contingency learning, perception of control, suppression, depressive realism

## International Civil Aviation Airworthiness Frameworks: An Assessment with the Bow-tie PBP Model

Tomás O'Connor, Aeronautical Engineering (University of Limerick)

### Abstract

The overall aim of this project, in the area of Aeronautical Engineering in the University of Limerick, was to study and analyse the safety performance of countries lacking in flight safety around the world and consequently, adapt an already existing assessment model to further refine the ability of aviation regulatory bodies to provide safe air travel. Civil Aviation in a global level undergoes a series of changes in the airworthiness domain (design, certification, maintenance, etc.). The goal of this research project was to:

- Capture the complexity of the major airworthiness frameworks around the world
- Identify the areas for potential improvement and transformation to match the global trends and the global aviation industry needs.



- Investigate a possible extension of the bow-tie PBP model to include safety metrics

The Bow-Tie PBP (Product-Behaviour-Process) assessment model (developed by Purton & Kourousis, 2013) provides a streamlined methodology for conducting this research, enabling comparison with mature airworthiness frameworks (EASA, FAA).

The resultant model is thus adapted to be representative of the safety performances of the analysed regions through. This was devised by the investigation into the factors leading to safe aviation performance and the result is the model which was adapted to include the analysed safety metrics and hopefully, further aid in safe air travel.

## **Student Teachers Attitudes and Awareness towards Sustainability and Sustainable Design**

Pádraig O'Donovan, Materials and Architectural Technology (University of Limerick)

### **Abstract**

Sustainability and environmental issues are becoming increasingly topical, and this should be reflected within our school communities. Our planet is facing enormous challenges, and it is essential that we stop the damage we are causing and sustain the limited resources we have for future generations. Drawing on relevant literature, it is evident that in order to make a change to our society and the current attitudes towards the environment, it is firstly essential to explore our student teacher attitudes, and how they change over time.

The research explores the attitudes that student teachers have towards sustainability, and whether there is a clear attitude change throughout the course of the teacher training programme. In order to achieve this, result were compared between 1<sup>st</sup> year students and 3<sup>rd</sup> year students.

To allow our future generation's attitudes and awareness towards these relevant topics to be enhanced, it is vital that our future teachers have the relevant skills and awareness about these topics. Teachers' values and attitudes are reflected on their students, so it is essential to continue to foster a value of these issues in our teacher training programmes, so this will be reflected in our school communities.

## **Redefining Relevance of Mother's Socio-Economic Status (SES) on Children's IQ and Does the Child Behaviour Check List (CBCL) at Two Years Predict CBCL Scores at Five Years**

Róisín O'Keeffe, Psychology and Sociology (University of Limerick)



### Abstract

Children growing up in low- income households experience a multitude of disadvantages and are exposed to an array of sub-optimum physical and psychosocial conditions when compared with their economically advantaged counterparts. Significant differences are also apparent in terms of children's access to cognitive stimulation and enrichment, reading books, and in face to face interaction with mothers. These early differences account for some between group variations in later educational and behavioural attainments. The Department of Paediatrics, in collaboration with the Departments of Obstetrics and Gynaecology, and Food/Nutritional Science, UCC and the Department of Dermatology, TCD have joined to create the BASELINE study (the first birth cohort study in Ireland). This study looks at two and five years olds ( N= 540 ). This study moreover looks at children's behavioural and intelligent deficits and mother's education and income. Data from the growing up in Ireland study showed significant differences in nine year olds reading and math abilities depending on mothers' education and income (Williams et al., 2009). Research is focusing on the Child Behaviour Check List (CBCL) results of two year olds and investigating whether results at five years of age are similar, thus, making the CBCL at two years a valid tool for assessment and prediction. Furthermore using the Kaufmann Brief Intelligence Test (KBIT) normality/ deficits in children will be obtained giving mothers' Socio- economic status (SES). Consequently if mothers fall into a lower SES category, will their children experience some level of deficits whether behaviourally or developmentally?

## An Investigation into the Cognitive Decision Making Process within Restrictive and Non-Restrictive Design Activities

Colin O'Neill, Materials and Architectural Technology (University of Limerick)

### Abstract

As the world around us is changing and advancing with the technology that surrounds us, so too is the domain of technology education. Over the last few decades technology education has been gaining a respected status in the education system and is one of the leading areas for the development of skills such as, problem solving, strategic thinking and creative innovation. This study aims to look deeper into how students interact with design on an educational level and identify how we can provide a better educational experience for the students in the tasks that we as educators set. It looks at the idea of presenting students with design activities which are either very specific in what the end solution should conform too (restrictive design) or an activity which is completely open to the interpretation of the designer (non-restrictive design). The study was conducted with participants coming from 3<sup>rd</sup> year student technology teachers and the comparison of results from two focus groups following on from engagement with the design activities were the basis of gathering some very interesting results.



## The Use of New Technologies in the Development and Measurement of Spatial Cognition

Colm O'Neill, Materials and Architectural Technology (University of Limerick)

### Abstract

Technology has evolved hugely in the past two decades and following this advancement, I will be exploring the benefits of the use of certain new technologies in the development and measurement of spatial cognition. The integration of these technologies into the secondary school setting, particularly the technology classrooms, potentially could be of large benefit to the pupils. Past research in the area has been limited by the lack in technology to test spatial cognition, technology which is now available. My main area of research is dynamic spatial visualisation, which is the visualising of moving objects. The technology I will be adopting is Augmented Reality and video software. I will be using these technologies to run psychometric tests to measure pre-service teacher's dynamic spatial ability, and also, develop it potentially. The value in this study would be in seeing if we could now test dynamic spatial factors reliably where historically this has been an issue. Following this research, it is aimed that the present spatial ability framework would be updated, and the use of these technologies could be the basis of the creation of interventions to help scaffold pupils' who find it difficult to visualise.

## General Aviation (GA) Maintenance Risk in the European Union (EU): Review and Trend Analysis

Darren Reilly, Aeronautical Engineering (University of Limerick)

### Abstract

An increase in activity in both General and Commercial Aviation in Europe over the past number of years has led to a greater interest in safety and airworthiness in the EU. Regulatory bodies for example EASA and FAA have worked hard to reduce the number of accident and incidents in their constituencies. Their hard work is paying off with a reduction in the number of fatalities per year since 2010. EASA publish their Annual Safety Review every year creating awareness in critical areas. Commercial Aviation has on average 52.4 fatalities per year where General Aviation has 211.4 fatalities per year. Accidents involving fixed wing aircraft as a result of technical failure account for the majority the general aviation fatalities. Therefore, accident and incident data on General Aviation Fixed-wing aircraft as a result of technical failure was collected and analysed from 3 sources, AAIU, AAIB and EASA Annual Safety Review. The completion and the quality of the maintenance that was conducted on the aircraft were analysed. A scorecard aliasing methodology developed at Purdue University was adopted for the study. A comparison study was conducted between the EU and Brazil.



Figure 1 contains accident data from AAIB and AAIU. It shows the number of accidents in relation to their maintenance records from 2008 to 2014 for Ireland and the UK. Maintenance issues include inspection, maintenance completion/quality, etc.

## Environmental Management under Conditions of the Sustainable Development in Developing Countries

Kateryna Rodionova, Chemical Engineering (University of Limerick)

### Abstract

At Imagine you live in a big beautiful house and there is a rule: if the waste is produced, you cannot get rid of it. How long will you be able to live in the polluted environment?

Now, let's think about this on a global scale. As the World moves forward and developed manufacturing industries provide modern society with a big amount of good quality products: food, healthcare, transport, medicine etc. we have to consider the waste which is produced at the same time. According to the World Bank by 2100 the rapidly growing global urban population will be producing three times as much waste as it does today and that level of waste carries serious consequences for cities around the world.

There are more issues such as global environmental change, emissions, highly toxic and persistent chemicals – regarding this management must have strategy on the international level. When dealing with environmental management in developing countries the goals must be turned to their needs – which is true for all countries. We understand that further way of dealing with such problems requires approaches with the aim to prevent environmental pollution; they must be efficient and include strategic sustainable development.

My presentation will be focused on several key issues. Why the idea of sustainable development got to be so important to us? How should we co-operate on the level of developing countries in the global system? How could we improve the quality of life for the poorer people of the world?

## Learned Cultural Rhythms: How Culture Affects Rhythmic Perception

Orla Rutherford, Irish Music and Dance (University of Limerick)

### Abstract

This project was inspired by my ERASMUS semester at Lund University in Southern Sweden. I found it extremely difficult to perceive and reproduce the rhythms found in Swedish folk music and this FYP explores the possibility that difficulties in rhythmic perception are culture based. The research uses both auto-ethnographic analysis and interviews with several different musically mono-cultural participants. Previous research done in the area of rhythmic perception tends to be dominated by the fields of neuroscience and linguistics. The overwhelming evidence from these scientific studies finds that while language does indeed influence rhythmic perception; culture exerts a far greater influence on rhythmic perception. I am coming to



the conclusion that culture does significantly affect rhythmic perception; as does musical training, musical literacy and the ability to dance.

## Investigating the Mechanism of Phosphorylation-Induced Structure of the Intrinsically Disordered 4E-BP2

Zeba Siddiqui, Medicine (University of Limerick)

### Abstract

**Background:** Eukaryotic initiation factor 4E (eIF4E) binding protein 2 (4E-BP2) is an intrinsically disordered protein (IDP) that regulates the initiation of cap-dependent protein synthesis by binding to eIF4E. 4E-BP2 activity is regulated by multi-site phosphorylation. Phosphorylation of 4E-BP2 at specific residues (T37, T46, S65, T70 and S83) weakens its interaction with eIF4E but the underlying mechanism is currently not understood.

**Objective:** Determine the mechanism of phospho-regulation of 4E-BP2 by investigating the effects of phosphorylating different sites of 4E-BP2 on the structural, dynamic and binding properties of 4E-BP2 with eIF4E.

**Methods:** We prepared <sup>15</sup>N labelled 4E-BP2 samples, performed differential in vitro phosphorylation at multiple sites using site-directed mutagenesis and purified the samples to homogeneity. We monitored structural and dynamic changes using NMR spectroscopy and measured binding affinities for eIF4E using isothermal titration calorimetry.

**Results:** Phosphorylating T37 and T46, but not S65, T70 or S83, induces folding of residues 18-62, blocking eIF4E binding, leading to significant reduction in affinity. Phosphorylating these sites individually induces partial structure with only marginal reduction in binding.

**Conclusion:** Phosphorylation of T37 and T46 contributes to protein folding in an additive manner. The degree of 4E-BP2 folded state stability negatively correlates with its binding affinity for eIF4E, suggesting that phosphorylation-induced folding of 4E-BP2 is the determining regulator of translation initiation. Interestingly, this is the first example of phosphorylation-induced folding of an IDP. This is ground-breaking, nullifying previous biochemical beliefs. This structural knowledge of 4E-BP2 can enable design of drugs to control protein synthesis in cancer and other pathologies.



## Characterization of the interaction of Unique Domain of Src Kinase and the NADH Dehydrogenase Subunit 2

Zeba Siddiqui, Medicine (University of Limerick)

### Abstract

**Background:** N-methyl-D-aspartate receptors (NMDARs), a subtype of glutamate receptors, are found at the post-synaptic neuronal membrane where they play a role in excitatory neurotransmission. NMDAR activity is regulated by various proteins, including kinases and phosphatases; Src-kinase is one such regulatory protein. Src is a non-receptor tyrosine kinase which up-regulates the activity of NMDAR via phosphorylation. The Unique Domain (UD) of Src interacts with the NADH dehydrogenase subunit 2 (ND2), which acts as an adaptor protein, anchoring Src to NMDAR.

**Objective:** Characterize the interaction of UD with cytoplasmic loop of ND2 (residues 299-321)

**Methods:** We prepared <sup>15</sup>N labelled UD and ND2 samples, performed in vitro phosphorylation at multiple sites using Erk2 and Protein Kinase A and purified the samples to homogeneity. Next, we monitored structural and dynamic changes using NMR spectroscopy and measured their binding affinities using fluoroscopy.

**Results:** UD residues 40-58 bind tightly with ND2 while full length UD (residues 1 to 85) shows poor binding affinity for ND2. Interaction of residues 1 – 64 UD with ND2 is mediated by UD phosphorylation which serves to relieve electrostatic repulsion between the two players, thus, increasing binding affinity.

**Conclusion:** Characterization of this crucial interaction can facilitate development of therapeutics specifically targeting this interaction. Inhibiting this interaction interferes with Src up-regulation of NMDAR and can be used to treat epilepsy and chronic pain, potentially with minimal side effects due to the specificity of UD:ND2 interaction.

## Self-Alert Training: Implications for Real-World Task Performance

Éadaoin Slattery, Psychology (University of Limerick)

### Abstract

Sustained attention is an elementary attentional function that is particularly sensitive to decreases in endogenous control. The current study evaluated the efficacy of self-alert training (SAT) in enhancing sustained attention to a monotonous data-entry task and also investigated the degree to which individual differences influence the effectiveness of the technique. SAT teaches people to gain volitional control of their alertness levels using skin conductance biofeedback. Undergraduate students ( $N = 50$ ) were randomly assigned to an alert or control group, with the alert group engaging in SAT and the control group engaging in relaxation training. Participants completed a 30-minute data-entry task, while self-alerting or relaxing. The results indicated that the effect of SAT on both task quantity scores and error percentage was not statistically significant and individual difference variables (sustained attention ability, stress, fatigue and



anxiety) did not affect the degree to which SAT was successful. A serendipitous finding revealed an interaction between sex and the effectiveness of SAT highlighting the importance of tailoring SAT to the needs and abilities of individuals. Limitations and theoretical implications are discussed.

Keywords: sustained attention, arousal, self-alert training, individual differences

## Predicting attitudes towards refugees: Intergroup disgust, and the mediating role of ideological orientations

Elaine Smith, Psychology and Sociology (University of Limerick)

### Abstract

**Aims:** Recent studies have demonstrated a relationship between disgust and attitudes towards minorities. There have also been studies revealing an association between right-wing authoritarianism and social-dominance orientation, and attitudes towards minority groups. The purpose of this study is to investigate the relationship between intergroup disgust and political ideologies, and attitudes towards refugees.

**Methods:** Approximately 200 Irish adults participated in an online survey which utilised an experimental manipulation of intergroup disgust and questionnaires measuring right-wing authoritarianism, social-dominance orientation and intergroup disgust sensitivity. An additional five variables were measured for control purposes. Behavioural, affective and ideological measures of attitudes towards refugees were also taken.

**Results:** Multiple regression analysis will be used to analyse the data. It is expected that a relationship between intergroup disgust sensitivity and attitudes towards refugees will be obtained, which may be mediated by right-wing authoritarianism and social-dominance orientation. If significant, this relationship suggests that those who score highly on intergroup disgust sensitivity would display more negative attitudes towards refugees when they have higher levels of right-wing authoritarianism and social-dominance orientation. Those who were randomly assigned to the intergroup disgust manipulation are expected to display more negative attitudes towards refugees.

**Conclusion:** These results will be discussed in light of literature on both incidental disgust and individual differences in disgust sensitivity. The implications of using various measures of attitudes towards refugees will also be discussed. It is hoped that this study will provide further insight into the area of emotional underpinnings of attitudes towards minority groups.



## The use of self-myofascial release prior to a dynamic warm up has an effect on athletic performance

Carol Smyth, Sport and Exercise Science (University of Limerick)

### Abstract

Self-myofascial release is a massage technique which is a growing trend for athletic performance enhancement. Despite the lack of supporting evidence, it has become common practice for athletes to use foam rolling (FR) as part of a warm-up routine. The purpose of this study was to investigate the effect of self-myofascial release on five specific performance variables of a single leg drop jump namely, leg spring stiffness (LSS), reactive strength (RSI), ground reaction force (GRF), ground contact time (CT), and height jumped. Data was collected and analysed from college level students (n=10; 5 male, 5 female, aged 18-21 years). The pre-test consisted of a standardised dynamic warm up and performance of 3 single leg drop jumps on a force sledge apparatus (angle 30° and height 30 cm) on both legs. An average of the jumps was obtained. The intervention consisted of 90 seconds of FR per muscle group on the dominant leg, while the non-dominant leg acted as a control. A repeated measures ANOVA was used to examine mean differences. No significant differences were found between dominant and non-dominant legs in the pre and post tests on all five variables. However, a significant difference ( $p < 0.05$ ) was observed between pre and post-test, as LSS and GRF in both legs decreased. These data indicate that foam rolling, when used within a dynamic warm up has no performance enhancing effect. Future studies should consider rate of force development, warm up effect, and bilateral crossover to fully evaluate the potential effects on performance.

## Attitudes, knowledge and beliefs: how nurses and midwives care for LGBTQ patients

Kate Stewart, Health Sciences (University of Limerick)

### Abstract

**Background:** The LGBTQ population is subject to numerous health disparities, many of which are associated with discrimination within the healthcare system or poor health education and screening by staff. As nurses and midwives are key actors in the assessment, treatment and education of patients across the care system, it is essential that they approach every patient with unconditional positive regard and empathy.

**Aims:** To explore current literature surrounding the knowledge, beliefs and attitudes of nurses and midwives caring for LGBTQ patients and determine what barriers exist to equal and non-discriminatory care for the LGBTQ population?



**Methods:** This study used integrative review and thematic analysis to synthesise the literature and generate themes and sub-themes. Computerised searches of 4 databases were undertaken for the period between 2006 and 2015.

**Results:** 24 papers were included in the final synthesis. The synthesis of findings revealed four primary themes: Heteronormativity across Healthcare; Queerphobia; Rainbow of Attitudes; Learning Diversity, Unlearning Privilege.

**Conclusion:** Nurses and midwives possess a wide spectrum of attitudes, knowledge and beliefs which impact the care received by the LGBTQ population. Many issues of inadequate care appear to be due to a culture of heteronormativity and a lack of education on LGBTQ health. Therefore, the author would recommend further research on interventions which could facilitate disclosure of sexual orientation and interrupt heteronormative assumption by staff. The author would further recommend that LGBTQ issues be included within undergraduate nursing and midwifery education or as part of continued professional development.

## **Artificial Neural Network Optimization by Genetic Algorithm for Describing Viral Production from Uniform Design Data**

Maria Beatriz Takahashi, Medicine (University of Limerick)

### **Abstract**

The objective of this research project was to develop a genetic algorithm for optimizing parameters of an artificial neural network (ANN), which describes rabies virus production in BHK-21 cells based on empirical data derived from uniform designs with different numbers of experimental runs. The parameters considered for viral infection were temperature (34 and 37 °C), multiplicity of infection (0.04, 0.07, and 0.1), infection, and harvest times (24, 48, and 72 h), with virus production as the monitored output variable. A multilevel factorial experimental design was performed and used to train, validate, and test the ANN. Its experimental fractions (18, 24, 30, 36, and 42 runs) defined by uniform design were used to simulate the neural architectures. In genetic algorithm, the neural computing parameters constituted the population individuals, and the steps involved were population creation, selection, and replacement by crossover and mutation. The ANN optimized by the combined algorithm showed a good calibration for all uniform designs under consideration, thus demonstrating to be suitable ( $R > 0.85$ ) as a correlation method in uniform designs independent of the experimental runs developed. Therefore, this work could guide researchers in the efficient use of uniform designs in the simulation and optimization of virus production processes.

## **Attitudes towards Syrian Refugees amongst Irish and Polish population in Empathy and Threat inducing conditions**



Angelika A. Trebicka, Psychology and Sociology (University of Limerick)

#### Abstract

Social psychology is interested in attitudes towards outgroups. Previous research has shown how various things, such as feelings of empathy or threat, socioeconomic status or education effect attitudes. The purpose of this research was investigation and comparison of attitudes towards Syrian refugees amongst Polish and Irish populations, and an investigation whether inducing threat or empathetic reaction amongst participants has an effect on them. A 30 minute online survey was compiled, which gathered demographic, social identity, realistic and symbolic threat, empathic concern, desirable responding and emotional/attitude information. It is expected that results of an ANCOVA and correlational analysis will show a more positive attitudes towards Syrian refugees in empathy group and amongst respondents with highest scores on empathic concern scale, while realistic threat is expected to be the most accurate predictor of negative attitude. Desirable responding and education level obtained will be controlled for as they have previously been proven to affect responding in relation to attitudes towards outgroups. Whatever results the study will yield, it will give an interesting insight into the current attitudes of two European populations towards the refugees, which will give an idea of what means to put in place to ease the transition of the refugees into Europe for both the newcomers and the hosts. Implications and possible strategies for member states for the near future will be discussed.

## Should we Take Multivitamins?

Adam Tzur, Medicine (University of Limerick)

#### Abstract

**Background:** Multivitamins (MVs) are commonly used in the western world as they are assumed to prevent diseases and improve general health. Consumer reports have demonstrated that the public perceives this type of supplementation to be beneficial, despite a lack of scientific backing.

**Objectives:** To build a theoretical foundation for understanding micronutrient interactions and determine whether MVs modify the risk of cardiovascular disease (CVD), cancer, and all-cause mortality in various populations. The effects of MVs on general health and micronutrient deficiencies were evaluated and compared to the effectiveness of isolated supplementation.

**Methods:** The scientific databases PubMed, Google Scholar, and Research Gate were searched for studies pertaining to MVs and their effects on health and disease states. Scientific studies, nutrition textbooks and various resources were used to build a theoretical foundation describing micronutrient interactions with a primary focus on antagonism, synergy, vitamins, absorption rates, and antivitamins. A secondary focus was placed on microbiomes, co-factors, and intrinsic factor.



**Conclusions:** Several large-scale studies and systematic reviews have demonstrated MVs to be ineffective in preventing CVD, in lowering the risk of cancer and all-cause mortality. Certain populations should avoid MVs due to potential increases in metastasis. Furthermore, MVs are inadequate for improving plasma-level concentrations of micronutrients, compared to isolated supplementation.

**Practical applications:** MV supplementation should be avoided by the general public. Individuals who are interested in improving their health are advised to make informed dietary choices and supplement specific micronutrients as needed.

## The interaction between loneliness and social support in relation to cardiovascular reactivity to stress in a young adult sample

Helen Walsh, Psychology (University of Limerick)

### Abstract

**Background:** Social support is thought to influence health by buffering our physiological responses to stressful events, particularly in terms of *cardiovascular* reactivity (CVR) to stress. Loneliness is the perception that a person does not have sufficient quality or quantity of relationships, and has also been linked to elevated stress reactivity in adult samples. Although younger adults are a high-risk group for loneliness, few studies have examined loneliness in this age group. No research has investigated the interaction between social support and loneliness on CVR to stress in this cohort. However, social support availability has been linked to lower CVR to stress in previous studies. Because stress reactivity is linked to future health status including mortality, psychological factors influencing stress reactivity are important to elucidate.

**Aims:** This project investigates the interaction between social support and loneliness on cardiovascular reactivity to stress in a sample of younger adults (aged 18-25 years).

**Methods:** Participants completed a laboratory-based stress protocol where support was either given or not given prior to a stressful maths task. Loneliness was measured using the UCLA loneliness scale. Blood pressure and heart rate were measured throughout using a Dinamap monitor.

**Results and Conclusions:** A factorial ANOVA will examine the interaction between support and loneliness (high vs. low) on cardiovascular stress reactivity. The results will shed light on the biological mechanisms by which loneliness may lead to poorer health in young adults and the possible benefits of social support to cardiovascular health in relation to loneliness.



## Electronics From the Bottom Up: Incorporating van der Waals Effects in Quantum Mechanical Calculations

Aaron Young, Applied Physics (University of Limerick)

### Abstract

Great interest has recently developed in the field of nanoscale electronic circuits constructed from molecular scale components. In realising these next-generation ultra-miniaturised circuits it is important in the design phase to accurately model the effects of the reversible van der Waals (vdW) “glueing” interaction between molecules and between molecules and the circuit board. One such method to calculate these interactions is Grimme’s method of an empirical additive dispersion term with density functional theory (DFT-D). I have investigated different models, assessing their computational cost vs. ability to give consistent data that agrees with experimental binding measurements (where known) and with the most accurate post-Hartree Fock methods.



**Notes**

