



**ALL-IRELAND
CONFERENCE
OF UNDERGRADUATE
RESEARCH (AICUR)**



**UNIVERSITY OF
LIMERICK**
OLLSCOIL LUIMNIGH

Centre for Transformative Learning

Booklet of Abstracts 2022

Contents

AICUR Organising Committee 2022	5
Keynote Speaker -	6
Student Contributions	7
Live Presentations	7
Posters	30



Welcome to the 9th All-Ireland Conference for Undergraduate Research (AICUR)

Limerick, 2022

The conference is hosted by the Centre for Transformative Learning (CTL) in collaboration with internal and external stakeholders.

What is AICUR?

AICUR is the same as other academic conferences but what makes it special is that research contributions are delivered by undergraduate students showcasing their research output as part of their undergraduate studies.

The main aim of AICUR is to promote and applaud the fascinating and worthwhile research that is produced at undergraduate level. In multi-faceted ways, AICUR 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 Higher Education Institutions (HEIs) across Ireland the opportunity to present their research and discuss their creative accomplishments through posters, performances, 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 exhibiting the highest standards of undergraduate research in Ireland and should feel themselves pioneers, exploring the parameters of what undergraduate research in higher education can achieve.

The AICUR programme is structured 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. 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)

A note from the AICUR Chair 2022

The 9th All-Ireland Conference for Undergraduate Research (AICUR) is being hosted as an online conference by the University of Limerick in March 2022.

Students from Higher Education Institutions (HEIs) in Ireland were given the option to participate in an online AICUR offering. They responded to this format with an enthusiasm clearly reflected in this 'Book of Abstracts'. As a result of student commitment and resilience, in addition to the live conference, there will also be a repository of conference contributions hosted on this year's AICUR [webpage](#).

'Student engagement' and 'student success' are terms used across the Higher Education sector, but how these broad terms apply to an individual student is multifaceted. The creation and annual hosting of AICUR provides a platform for students to share their undergraduate research and experience the setting of an academic conference. The feedback from students about the developmental opportunity AICUR affords them makes



this conference continually worthwhile. Being a delegate of AICUR facilitates a feeling of success for each student who is dedicated and brave enough to put themselves forward. This sense of success is one all students should experience throughout their undergraduate programmes.

“Enabling student success is critical to our national ambitions at an economic, societal and sectoral level...it is fundamental to maximising the transformative impact of higher education for our students.”

(Understanding and Enabling Student Success in Irish Higher Education, National Forum, 2019, p.1)

Many people make a conference happen, and to organise and host a conference online required the assistance of great colleagues. Special thanks to Sharon Cunnigham who kindly agreed to deliver the conference keynote address; the AICUR Organising Committee who contributed to the planning and recruiting for the conference; the ongoing support from the Head of CTL, Dr Mary Fitzpatrick, and the CTL administrative team, particularly Rosaleen Archbold.

Without the support of our student and staff advocates within UL, and extended networks in other HEIs beyond UL, we wouldn't have such successful conferences.

Final recognition goes to all the students who took the time, and made the effort, in difficult circumstances to present their work, a very well done to you all.

We look forward to AICUR 2023, be that online, in-person or a blended approach!

Claire Halpin, Centre for Transformative Learning
AICUR Chair, 2022



AICUR Organising Committee 2022

Membership

Membership

Claire Halpin, Educational Developer, Centre for Transformative Learning

(Claire.Halpin@ul.ie) (Conference Chair)

Maura Murphy, Manager, Centre for Transformative Learning (Maura.Murphy@ul.ie)

Rosaleen Archbold, Centre for Transformative Learning (Rosaleen.Archbold@ul.ie)

Alice Hynes, Vice President, Student Life (studentacademic@ul.ie)

Dr Liam Murray, Arts, Humanities & Social Sciences (Liam.Murray@ul.ie)

Jill Pearson, Personnel and Employment Relations (Jill.Pearson@ul.ie)

Dr Teresa Curtin, Science & Engineering (Teresa.Curtin@ul.ie)

Dr Óscar Mascareñas Garza, Irish World Academy of Music & Dance

(Oscar.Mascarenas@ul.ie)

Phillip Desmond, Student Support Officer, Science & Engineering (Philip.Desmond@ul.ie)

Declan Mills, Student Support Officer, Kemmy Business School (Declan.Mills@ul.ie)

Ciara Hegarty, Student Support Officer, Arts, Humanities and Social

Sciences (Ciara.Hegarty@ul.ie)

Aisling Cusack, Student Support Officer, Education & Health Science

(Aisling.Cusack@ul.ie)

Web: <https://www.ul.ie/ctl/students/all-ireland-conference-undergraduate-research-aicur>

Email: Rosaleen.Archbold@ul.ie

Keynote Speaker

Sharon Cunningham



Sharon Cunningham is CEO, Co-Founder and board member of Shorla Oncology ('Shorla'), a speciality pharmaceutical company headquartered in Ireland with an office in Cambridge, Massachusetts, U.S. The company has developed an innovative pipeline of oncology drugs for global markets focussing on women's and children's cancers, solving unmet needs and delivering a significant contribution to patient care.

Sharon is a Chartered Accountant by profession; having graduated with a BSc in Finance from University College Cork, Ireland, she trained with PricewaterhouseCoopers ('PwC') in Ireland.

Following 4.5 years with PwC, including a secondment to PwC New York, she spent 7 years at EirGen Pharma in Waterford, Ireland; first as Management Accountant, then Financial Controller and subsequently Head of Finance. She led the raising of an early-stage equity investment of €19m and was the internal lead on the company sale for \$135m to US multinational OPKO Health Inc. ('OPKO') in 2015. She became a compliance officer and member of the SOX disclosure committee for NASDAQ listed OPKO.

Sharon undertook a two-year executive MBA at University College Dublin Michael Smurfit Graduate Business School, graduating in 2015. She went on to co-found Shorla Oncology with her EirGen Pharma colleague, Orlaith Ryan in January 2018. Three years since founding the company, the duo have raised €10m, attracted world-renowned investors, board members and advisors and have an advanced portfolio of speciality oncology products with FDA (the regulatory authority) approval imminent.

Bio

Sharon was awarded the title of Ireland's Best Young Entrepreneur in 2019 and was included on a list of 50 people to look out for in 2020 by the Irish Times. She also won the prestigious Worldwide Association of MBA's Best Entrepreneurial Venture Award 2020. In 2019, she led an international team to win the MIT-Harvard Medical School Healthcare Innovation Bootcamp Pitching Competition in Cambridge, U.S. Shorla was named Local Enterprise of the Year at the KPMG/Irish Times Business Awards 2020. Sharon was recognised as one of the 100 most influential CEO's in Ireland by the Business & Finance Media Group 2020.

Passionate about the promotion of equality and in particular, gender balance, Sharon is a current member and previous board member of Irish Rule of Law International, a joint

initiative of the Law Society and the Bar of Ireland and Northern Ireland dedicated to harnessing the skills of Irish lawyers in using the law as a means of tackling global injustice and empowering all people to live in a society free from inequality, corruption and conflict. Sharon is a currently an Advisory board member at LSX Female Founders.

With her track record as Head of Finance, CEO and board member (both executive and non-executive), Sharon brings key operational, strategic and governance experience.

Student Contributions

Live & Recorded Presentations

(Presented alphabetically by lead presenter.)

"I'm afraid that people will not understand that I loved my son" Women's Experiences of Termination of Pregnancy for Fetal Anomaly's

Eavan Brennan, BSc Midwifery, University of Limerick

Abstract

In Ireland the legal status of termination of pregnancy was recently changed by popular vote repealing Article 40.3.3 of the Irish Constitution and paving the way for the government to legislate with regard to the provision of abortion care in the Health (Regulation of Termination of Pregnancy) Act 2018. There has not to date been any research published on the experiences of women living in Ireland who have required a termination for fetal anomaly (TOPFA) since the law changed in January 2019.

Ballantyne et al (2009) question the ethical status of prenatal diagnosis in a climate hostile to choice in abortion care. Fetal medicine specialists (FMS) working in Ireland have expressed the many difficulties that remain, regardless of technology and legislation change, when providing care to Irish women who receive a diagnosis of fetal anomaly.

Termination of pregnancy due to fetal anomaly may be comparatively rare, nevertheless the effects are devastating. Therefore, this study aims to review the most current research on women's experience of termination of pregnancy for fetal anomaly.

This focused review reports that women and their families find their care lacking and many state that deficiencies in care during and after diagnosis and termination negatively affected their experience and their ability to cope. A significant gap noted was the absence of a lead professional assigned to each case to provide continuity of care throughout the experience. Women stated feeling that gaps in their care failed to acknowledge the specific nature of the hugely traumatic life event that they experienced.

As key knowledge holders, women's voices should inform legislation and policy on TOPFA and HCP should be empowered to include the families wishes in the decision making process. The woman's needs and those of her family must inform more effective supports and tailored care pathways for families who are given an antenatal fetal anomaly diagnosis.

Degradation of Polymers in the Environment

Aoife Breslin & Caoimhe Grace, Industrial Biochemistry & Environmental Science, University of Limerick

Abstract

The world came to a standstill in March 2020, when the World Health Organisation (WHO) declared Covid-19 a global health emergency. During the pandemic, governments implemented different preventative measures to reduce the transmission of the virus, such as the use of facemasks and other Personal Protective Equipment (PPE). As a result of this pandemic, an estimated 3.4 billion disposable face masks are discarded daily ([Benson N. et.al, 2021](#)). Among these, a large share are being discarded improperly, by dumping or littering. These face masks are made of plastics, primarily polypropylene and polyethylene. This study investigated the degradation of these polymers: if and how they degrade, and whether pollutants such as microplastics are emitted during the degradation process.

Single-use medical facemasks were investigated and were subjected to a variety of conditions with the aim of mimicking littering and degradation scenarios. This included exposure to air, water, soil, different temperatures, UV radiation and chemical treatment. The masks and their components were characterized and analysed using instrumentation, such as FT-IR (Fourier transform infrared spectroscopy), A.A (Atomic Absorption Spectrometry), and G.C (Gas Chromatography). The results revealed almost no chemical degradation over a period of six months. However further experimentation revealed that some physical degradation of the face masks did occur, with the release of micro and nano plastics in aquatic environments. The slow degradation and the formation of microplastics indicates that the environmental impact of Covid-19 will last beyond the pandemic.

Examining the Experiences of Women Activists Who Challenge the Treatment of Women in The Irish Music Industry.

Annabelle Buttery, BA Performing Arts (voice), University of Limerick

Abstract

There is a large gender gap in the Irish music industry. There are many statistics highlighting that women are afforded much less radio play and as a result are much less likely to receive exposure. This study aims to investigate the gender disparity within the Irish music industry and to examine the experiences of the women activists who advocate for change in this area. After a review of key literature three prevalent women activists were interviewed about their personal experiences as activists in the industry and about their own views on the representation of women in Irish music. Analysis of their responses to the interview questions outlined their experiences as activists and the main systemic issues that lead to this gender disparity as well as solutions to these problems. This research paper finds that women in the music industry often encounter gender violence, sexual assault and other threatening behaviour. It also finds that there is a direct correlation between the success of an artist in the gigging circuit and radio play and this impacts women directly. In this research paper we see that women who take on activist roles in the music industry in Ireland experience a direct impact to their career, sometimes this is a positive impact and sometimes it is a negative one. Through the interview process it was also determined that the women activists believe gender quotas and diversifying the people in charge of decision making would aid in creating a more diverse music industry for the future. I believe further research into solutions to the gender gap in the Irish music industry is imperative.

The social economics of subjective well-being: A latent variable approach in a multi-national context

Fiachra Byrne, Bachelor of Arts, University of Limerick

Abstract

A key area of research in the social sciences focuses on the socio-economic underpinnings of subjective well-being with specific attention to individual markers such as education, (un)employment, and income. Importantly, broader economic contexts including both large-scale economic dislocations (e.g., the Great Recession in Europe) and political economic context (e.g., variation in varieties of capitalism and welfare state regimes) have seldom been investigated even although most would anticipate both direct and indirect effects on well-being. This project further investigates the socio-economic underpinnings of subjective well-being using a latent variable approach applied to data from over 90 thousand individuals from 29 countries that both predate and post-date the European recession of 2008-2012. It does so by focusing on four questions. After determining the psychometric structure of subjective well-being, we examine the impact of the economic downturn on well-being, whether welfare state context moderates the impact of economic conditions, and whether personal experience of the economic downturns (e.g., job loss and financial vulnerability) explain the effects of macro economic and political economic context. Results show that a) subjective well-being is a latent construct characterized by

competence, positive emotions, vitality, self-esteem, resilience, meaning and optimism and is reliable across economic contexts, b) counterintuitively well-being in general was marginally higher during the economic downturn; c) that the recession effect was heterogeneous across welfare state contexts – weakest in Scandinavian countries and strongest (i.e., most detrimental) in Eastern European ones; and d) labour market experiences such as unemployment, surprisingly, explain little of the overall effect of the recessionary context on wellbeing. While implications are many, it is most clear that the socioeconomics of subjective well-being need to be understood in a multi-level context and specific attention to political economic context that shapes the experience of socioeconomic disadvantage for people and populations.

Investigating the lack of Immersion Education regarding Second Language Acquisition, with specification to the French language, and the development of factors affecting language learners due to remote learning during COVID-19.

Chantel Connell, BA Arts, University of Limerick

Abstract

The onset of the COVID-19 pandemic surged people across the globe into restricted living conditions, by forcing them to work and study from home. This resulted in only one viable system for education: remote online learning. Language learning students were restricted to learning from a computer screen, with disruption to study abroad immersive programmes. Research questions regarding factors affecting second language acquisition, the role of immersive education within a language learning context and the effectiveness of remote online learning are fundamental to the aim of this study, which is to investigate the lack of immersion education regarding second language acquisition and explore the development of factors affecting language learners due to remote learning during COVID-19. Specifically, it focuses on language learner's perceptions and attitudes towards the three central topics within this study: second language acquisition, immersion education and remote learning through an online survey. Results support previous research such as motivation being an important factor for second language acquisition, along with immersion, practice, teaching and confidence being listed as recurring thematic factors. Immersion education proved to be very important by language learners, and remote learning received an overall negative response as learners found a decrease in language proficiency, desire, poor mental state and high levels of negative emotions such as anxiety, stress and loneliness.

Evaluating the Impact of Connected Autonomous Vehicle Behaviours on Traffic Congestion

Darragh Costello, Civil Engineering, University of Limerick

Abstract

The world of transportation is rapidly evolving and the era of connected and autonomous driving is closer than ever. Autonomous driving is likely to bring significant changes to the driving environment that will benefit our daily lives in multiple ways, from increased available time, driver comfortability and drastic increases to network capacity. CAV presence has the potential to remove congestion through traffic platoons, decreased gap distances between vehicles. In order to best create an environment on road networks best suited to CAV operation, the specific parameter changes between human and automated driving must be investigated. In this study traffic modelling software PTV Vissim is used to model both human operated and CAV under various parameter sets to understand the specific implications of certain parameters and how they change the flow of traffic on a network. The traffic flows are testing on a notional freeway network to focus on the interaction between vehicles in the system. It is shown that the microsimulation model can be used to show the effect of individual parameters and the reduction to congestion at key penetration rates of 30%, 60% and 95% for specific years. Correlations between traffic flows, specific parameter adjustments and the average velocity are made. The implication of CAV vehicle behaviours is shown to drastically reduce congestion on the notional freeway network.

The Stigma Surrounding Illegal Drug Use During Pregnancy

Muireann Cuddihy, BSc Midwifery, University of Limerick

Abstract

My FYP focused on the stigma surrounding illegal drug use during pregnancy. This is an issue I deem most relevant as a fourth-year student midwife with great clinical experience. Initially, I reviewed the definitions of stigma and substance misuse. Across the literature substance misuse in pregnancy is considered a prominent issue. Furthermore, the aim of my research is to eliminate or at least minimize the stigma surrounding illegal drug use in pregnancy.

The findings of my research were divided into the three following categories.

1. Types of Stigma.
2. The hierarchy of Stigma.
3. How Stigma impacts Maternity Care.

I believe that research must be related back to clinical practice. Furthermore, implications for practice was a key component of this paper. Staff training, Group programmes, woman-centred care, developing a harm reduction approach and reviewing punitive laws and policies were discussed in the paper.

The three take-home messages from the research are, midwives need to work with women not against them, midwives must see the woman as more than her addiction, and that to care for the baby, midwives must care for the mother.

This is a topic I am very passionate about and thoroughly enjoyed researching. Furthermore, I would be grateful to have the opportunity to continue my learning in this area.

Non-Self Recognition of Viral Infections and Its Implications in EBV-linked Autoimmunity

Aidan Desjardins, Biological and Biomedical Sciences, Mod. Microbiology, Trinity College Dublin

Abstract

The discernment of self from non-self is central to the immune system's role as the safeguard of the body. As such, an examination of the current body of knowledge related to strategies of non-self recognition is key to understanding the function of the immune system. This review examined the key pathways central to non-self recognition, and pertinent to antiviral responses, in both the innate and adaptive immune system. Further, these pathways were contextualized in the growing body of literature connecting viral infections to autoimmune disorders, focusing on the interplay between Epstein-Barr Virus and multiple sclerosis. The body possesses numerous strategies for the detection of exogenous material, ranging from the detection of conserved pathogen-associated molecular patterns to the detection of specific antigens. Errors in these pathways, and the resulting erroneous immune responses, represent key mechanisms for the development of autoimmunity. In understanding these key pathways at a more fundamental level, we may gain an understanding of their interplay in autoimmunity and the ability to develop better treatments for these debilitating conditions.

The Demise of the Irish Round Tower? Conservation in Civil Engineering. - An Investigation into the Stability of Kilmacduagh Round Tower

Ellen Doorly and Hayley Heyser, Civil Engineering, University of Limerick

Abstract

The Round Tower is Ireland's unique contribution to architecture from the 10th-13th century. They are a testament to the ingenuity, resourcefulness, and power of the early monastic communities who built them and symbolize their influence on Irish history. It is estimated that formerly 120 towers stood in Ireland however, only 73 now remain in various conditions. As these towers are historically significant and a cultural symbol, it is imperative that measures are taken to protect the towers that remain.

The subject of this analysis is Kilmacduagh Round Tower, Gort, Co. Galway. Kilmacduagh is recognised as the quintessence of round towers due to its size and condition. However, the tower has a historic tilt of approximately 2° to the southwest. The angle of tilt appears to be increasing due to the excavation of graves near the tower's foundation. Without intervention, the stability of the tower will ultimately be called into question. This paper presents the results from scaled model tower tests conducted in the UL laboratories. The test programme aims to determine the critical angle of tower collapse and to determine the failure pattern of the masonry so that remediation methods can be developed.

Three model towers were constructed: a simplified cylindrical timber model (1:20), a tapered timber model (1:30), and a tapered concrete model (1:30). The concrete model best represents the shape and weight distribution due to its similar density to the stone tower. An incline table and pulley system were used to slowly tilt the model until failure. The angle of masonry cracking and bulging was noted until it reached its ultimate collapse angle. Tests indicated failure will occur due to the separation of blocks on the side opposing the tilt at between 5° and 6.6°. These results may be used as a comparison against more advanced computer modelling methods in the future.

Kelly Betting: From Coin Flipping to Stock Trading

Aisling Doyle, Mathematical Sciences, University of Limerick

Abstract

Given a sequence of independent and identically distributed (i.i.d) bets, the “Kelly Criterion” provides a mechanism for choosing the bet size in a way that provides greater long run wealth than other strategies. In the Kelly approach, the bet size is determined by maximizing the expected logarithm of the wealth rather than the wealth itself. The Kelly betting approach can be understood first in the context of a classical biased coin, where we also compare different fractional Kelly values. We then analyse the Kelly Criterion in the case of correlated coins, where we are no longer dealing with i.i.d random variables. Following this, we use Monte Carlo simulations to obtain the expected wealth for a large number of coin tosses. We consider several disadvantages of Kelly's Criterion to provide the reader with an unbiased rounded discussion of the betting system. The ideas of Kelly

betting is then extended to the realm of financial stock trading. Finally, we evaluate our findings and summarise the myriad of advantages associated with Kelly's Criterion. A combination of analytic work, simulation studies, and real data analysis is carried out.

Léiriú na mban: An chaoi a ndéantar tubaiste mar thoradh ar iompar na bhfear i leith na mban agus a gcuma fhisiceach; Staidéar inscne ar stádas na mban i litríocht na Gaeilge

The Portrayal of Women: How men's behavior towards women and their physical appearance causes disaster; Gender study of the status of women in Irish literature

Abaigéal Drummy, Applied Languages, University of Limerick

Abstract

The research focuses on female characters in Irish folklore, The Fenian Cycle and The Ulster Cycle, in particular, and their portrayal within the setting of the stories. It highlights their beauty, and how their physical appearance is seen as a threat to male warriors of the stories. The findings of this research are based on the stories 'Toraíocht Dhiarmada agus Ghráinne', edited by Nessa Ní Shéaghdha (1967), and 'Oidheadh Chloinne hUisneach', edited by Caoimhín Mac Giolla Léith (1993), along with other relevant secondary sources.

The findings of my research show that women were the blame for the tragedies that occurred in their story, and their blame came from their good-looks, and their desire to change their societal position; as a mother, as a wife, and so on. The characters within the story can be described as powerful, and brave women, however, because of their fate, tragedy is the consequence of their words/actions. It is through male domination and power that women appear as treacherous characters, who are the cause of the pain that men in the stories suffer.

These findings were very similar to the societal position of women in the past, particularly 15th century onwards, and it is through these connections that an insight into the role of women in literature is portrayed. By going against her expected role (as a mother, wife etc), she was a threat to the public. Without having a husband, the women kept their premarital status.

The overall finding of my research was that women should not speak their desires, as they endangered their men and themselves by doing so. Through these findings, I was able to conclude that these stories represented the reality of life, and the role of women in both literature and in Irish society

A research project proposal: 'Dose group membership and perceived social support mediate the negative outcomes of Stressful life events in later life?

Lynn Fenton, B/A in psychology and sociology, University of Limerick

Abstract

Stressful life events during childhood are associated with unfavourable outcomes in later life. However, few studies investigate potential mechanism which may hold the ability to ease the extent of such negative outcomes. This study aims to firstly showcase that stressful life events detrimental effects on an individual in later life particularly adverse behavioural outcomes, in support of past research conveying that early childhood experiences are particularly sensitive and impact later develop. Additionally, this study hopes to illustrate that social support and group membership will reduce the negative impacts of stressful life events during childhood, supporting the social cure hypothesis.

This quantitative analysis will use data from the Fragile Families and Child Well-being Study, which is a longitudinal birth cohort study that recruited over 3000 parent–child dyads in 20 U.S. urban cities from 1998–2000. Three waves from the cohort study of American children will be implemented to conduct this analysis. Wave 3 consisting of information of the child at three-year-olds, wave 5, comprised of knowledge of the child at nine-years-old, and wave six encapsulating the child at age fifteen.

The key independent variable was stressful life events the child experienced at age five. Ten different types of childhood adversity experienced by the focal child were dichotomized. A cumulative SLE score was created by summing those ten categories together. The decision regarding the type of childhood adversities which were included was informed by Felitti et al., (1998) seminal stressful life event study, as well as common practices of other SLE research that considers poverty and parental death (Finkelhor et al., 2013; Purewal et al, 2016).

The dependent variable was child behavioural health outcomes at age fifteen which was measured by Externalizing (30 items) and Internalizing Subscales (23 items) of the Child Behaviour Checklist (Achenbach, 2001). The mediating variables were Group membership and perceived social support (PSS) at child age nine.

Based on past research, I predict that both group membership and perceived social support should reduce the negative behavioural outcomes of children who have been subject to stressful life events in early childhood, thus providing relevant information that can be used to inform policy and practise and help assist vulnerable children.

The effects of different post warmup recovery durations on 2000m rowing ergometer performance

Rowan Fitzpatrick, Sport & Exercise Sciences, University of Limerick

Abstract

The purpose of this research was to investigate the effects of different post warmup recovery durations (9- and 20-minutes) on 2000m rowing ergometer (Concept 2, Model E, Morrisville, Vermont, USA) performance. Five male (age: 20.8 ± 1.9 years; height: 190.7 ± 4.8 cm; body mass: 84.9 ± 7.2 kg; rowing experience: 7.6 ± 2.3 years) and two female (age: 19 years; height: 171.7 ± 13.5 cm; body mass: 70 ± 14.6 kg; rowing experience: 7 years) national level senior rowers completed the study. Subjects were required to complete each condition and were randomly assigned to a 9- or 20-minute post warm-up recovery duration at their first testing session. Testing was conducted over two separate days with each session one week apart. During each session, subjects blood lactate, heart rate, core temperature, and rating of perceived exertion were collected at three intervals (immediately post warmup, within 30-seconds prior to starting 2000m time trial, and immediately post 2000m time trial). 500m split times and mean values for power output and stroke rate were recorded from the ergometers integrated monitor after each session. After data collection is fully completed*, it will be analysed using SPSS (version 20) (IBM, Armonk, NY, USA). Shapiro-Wilk test was used to test the normality of the data. Descriptive statistics were used to describe the study population and the output of the outcome measures using means and standard deviations. Independent t-tests will be used to compare the difference of the mean values between the 9- and 20-minute recovery durations. Pre-race warmup and recovery duration are integral for sporting competitions as they have the potential to improve performance and reduce injury risk. The results of this research will be impactful to the rowing community in influencing pre-race strategy for higher performance.

*Data collection will finish 10/03/22. Results will be finalised prior to live presentation.

Dance ambassadors- developing digital platforms for Irish dancers and reaching new audiences

Derbhla Freeman, B.A. Arts (Gaeilge and Irish Music and Dance), University of Limerick

Abstract

The title of this Final Year research Project is 'Dance ambassadors- developing digital platforms for Irish dancers and reaching new audiences'

The main interest of this research study is to document and analyse how dance ambassadors have developed Irish dance digitally and how traditional Irish step dance has modernized /expanded online. This research study will also examine *CAIRDE* and the global success of the Irish step dance group. This group of young men exploded onto the performance scene in recent times and have very quickly become a worldwide TikTok sensation. This study will

track their journey- from stage to screen and illuminated the factors which influenced their success to date.

The Covid-19 pandemic played a pivotal role in increased screen time in adolescents. The pandemic and the role it played on the expansion of Irish dance online will be explored. While it may have come across as a negative thing, it too came with its advantages. Apps such as Zoom helped teachers deliver classes online while other dance ambassadors such as *CAIRDE* and The Gardiner Brothers kept dancers digitally engaged through video compilations on Tik Tok and Instagram.

Lastly, as part of my investigation, information will be collected and analysed from an interview conducted with the dance troupe *CAIRDE*. Each of their perspectives around how the group evolved so quickly on social media platforms will be compared. As well as this, both their practice and performance will be investigated. This research will also consist of an analysis of collected data from a survey which will be distributed to Irish dance teachers internationally. This survey will examine their knowledge of *CAIRDE* and their view surrounding the 'modernisation' of Irish step dance.

Improving outcomes for couples undergoing fertility treatment through microfluidic based sperm selection.

Kelsi Gallati, Biosciences, University of Limerick

Abstract

Background: One in six couples experience infertility with male factor infertility contributing to 50% of cases. Most fertility clinics use density gradient centrifugation for sperm selection exposing sperm to silica nanoparticles with heavy metals which damage sperm DNA integrity and increase risk of miscarriage. Therefore, more physiological sperm selection methods are urgently required.

Objective: The objective of this study was to assess sperm quality following selection using a prototype microfluidics technology and compare this to sperm selected using density gradient centrifugation.

Methods: Frozen-thawed sperm samples from donors (n=20) were subjected to each treatment namely control (non-sorted) and either sorted by density gradient or microfluidics following which sperm quality was assessed. Motility was characterised as progressive, non-progressive, or immotile. Morphology was classified as normal or contain abnormalities in the acrosome, head, midpiece, or tail. DNA fragmentation was assessed by sperm chromatin structure assay using the fluorescent probe acridine orange to detect fragmented DNA using a flow cytometer. Data were checked for normality of distribution and analysed using analysis of variance. All data are presented as mean \pm standard error of the mean.

Results and Conclusion: The microfluidic treatment yielded higher progressive motility ($80 \pm 4.0\%$) compared to density gradient and control treatments ($50 \pm 5.0\%$ and $40 \pm 4.0\%$,

respectively; $P < 0.05$). The mean percentage of sperm with DNA fragmentation was 5.4% and there were no differences amongst treatments ($P > 0.05$). The mean normal sperm morphology across the treatments was 11.34% and this was not different between the treatments ($P > 0.05$). The conclusion from this study using frozen-thawed human sperm is that microfluidics can select sperm with higher progressive motility but does not result in improvement in sperm morphology or DNA integrity. More work of modifying the prototype and testing on males with predefined subfertility is required.

Funding: HRB Summer Student Scholarship (SS-21-062)

Narrative 4 Story Exchange Programme Evaluation

Jade Gill, BSc in Psychology, University of Limerick

Abstract

Introduction: Better teacher social emotional competency has been identified as critical to the emotional development of their students and also to lower rates of stress and burnout. Narrative 4 is a not-for-profit organisation that advocates for the development of empathy in youth through a storytelling intervention called a Story Exchange, most often facilitated by a teacher. At present, hundreds of schools worldwide facilitate story exchanges amongst their staff and students. Whilst the primary aim of the story exchange is to enhance the social emotional competency of youth, a possible secondary outcome is the enhancement of social emotional skills in those who undertake the training. The current study explores the role of the Narrative 4 Story Exchange methodology in the development of empathy, and other social emotional competencies, in a sample of Irish secondary school teachers.

Procedure: Ten qualified secondary school teachers took part in this study. At the time of interview, participants were in the process of completing, or have already completed, Narrative 4's facilitator training programme. Virtual, 30- to 40-minute, semi-structured interviews were carried out with each participant.

Data Analysis: Interviews were recorded and transcribed verbatim. Transcription analysis led to the identification of three overarching outcomes of the Narrative 4 Story Exchange facilitator training: increased empathy, improved professional interactions and relationships, and concern surrounding boundary maintenance during the Story Exchange methodology.

Discussion: The importance of empathy enhancement in the Irish educator population is discussed in light of previous literature on teacher social emotional learning. Further, potential challenges of the Story Exchange methodology, as identified by participants, are

presented. Methodological limitations of the current study, and their impact on results, are explored.

Attachment As A Moderator Between Social Support and Cardiovascular Recovery From Stress

Chloe Looney, BSc. Psychology, University of Limerick

Abstract

Cardiovascular reactions to acute psychological stress is a key pathway linking stress to heart disease. More recently, work has shown that it is not just cardiovascular reactivity that is cardiotoxic but also cardiovascular recovery from acute stress. This paper aims to contribute to emerging research on the psychosocial mechanisms that may underlie cardiovascular recovery (e.g., systolic (SBP) and diastolic blood pressure (DBP)). The current study investigated avoidant and anxious attachment as a moderating variable explaining the association between social support (instrumental and emotional) and cardiovascular recovery, - utilizing an existing observational laboratory-based study. 278 young adults completed psychometric measures of attachment style and social support using, with continuous cardiovascular measurements obtained using the Finometer Pro hemodynamic monitor. Results showed that there was no association between attachment and support for DBP or heart rate. However, the association between emotional support and systolic blood pressure recovery was moderated by avoidant attachment, $F(9, 72) = 2.03$, $p < .05$, $R^2 = .15$. These findings suggest a low presence of avoidant attachment strengthens the positive relationship between emotional support and systolic blood pressure recovery, which has been linked to negative health outcomes such cardiovascular disease. Overall, this research expands on the stress-buffering hypothesis which posits that social support is health protective against stress negative effects on cardiovascular health. The current study extends this theory by incorporating under researched physiological responses i.e., recovery and focusing on the psychosocial influences which underlie the process of recovery from acute stress (attachment and social support).

Keywords: Moderation Analysis, Cardiovascular Recovery, Avoidant Attachment, Emotional Support.

X-Ray Image Contrast Calculator for Medical Device Materials

Romane Lopes McKenna, Applied Physics, University of Limerick

Abstract

Minimally invasive surgical procedures such as catheter and stent implantation, which frequently use guidewires, are predominantly monitored via X-Rays and are dependent on the ability to visualise the medical device as it enters and travels through the patient. This project aimed to create a software program which calculates the radiographic contrast of a material to help predict its visibility during such procedures, in the form of a user-friendly graphical user interface (GUI).

An in depth literature review surrounding the attenuation of X-Rays by materials, the relationships between material composition and radiopacity, and how this gives rise to radiographic contrast was essential to the creation and functioning of the program. It was created using Python version 3.9 and involves entering the material or compound, material thickness, X-Ray tube settings and X-Ray tube voltage. Once the data is provided, graphs can be made for the material and X-Ray spectra, and the contrast can be calculated and returned as a single value. Compounds can be chosen from a list of available options, or created manually by the user by entering the components and fractional weights.

The outcome of the project is a simplistic and adaptable interface that allows for the prediction of visibility and the optimised selection of materials, for a wide variety of frequently used X-Ray tube settings and many elements relevant to the medical world.

The Potential of NNMT as an Anti-Cancer Target in Oral Squamous Cell Carcinoma

Brian Maloney, Dental Science, Trinity College Dublin

Abstract

Oral squamous cell carcinoma is the sixth most common cancer in the world and accounts for more than 90% of oral malignancies. Current treatment regimens against OSCC are highly invasive and not totally satisfactory. The enzyme nicotinamide N-methyltransferase (NNMT) is overexpressed in a variety of human cancers and has been investigated as a potential anticancer target. A recent in-silico investigation to identify inhibitors of NNMT produced several potential candidates.

The aim of this project was to detect if NNMT is expressed in an oral squamous cancer cell line (SCC-4) and dysplastic oral keratinocytes (DOK) and determine the effect of the identified modulators of NNMT on cell viability and respiration, a novel task that has not been done before.

SCC-4 and DOK cells were cultured as per standard guidelines. The expression of NNMT was assessed by immunoblot. Cell viability was determined by alamar Blue assay. Cellular respiration and extracellular acidification rate were determined by Seahorse XF analyser. The inhibitors were identified as part of an in-silico analysis of NNMT and are named inhibitor 1 and 4.

This investigation confirmed the presence of NNMT in both SCC-4 and DOK cells. Neither inhibitor had any significant effect on the viability of either cell line. Significantly, our data has shown that the two NNMT inhibitors studied reduce oxidative phosphorylation ($p < 0.001$) and appear to increase glycolysis in DOK and SCC-4 cells.

Our data suggests that NNMT is expressed in both oral squamous cell carcinoma (SCC-4) and dysplastic (DOK) keratinocytes. Neither inhibitor had a cytotoxic effect at the concentration range and incubation times used. The inhibition of NNMT by the selective inhibitors attenuates cellular respiration and concurrently increases extracellular acidification rate, thus interfering with energy metabolism. This suggests that the inhibition of NNMT may prove a potential therapeutic target for the long-term treatment of OSCC.

Loneliness, Social Support & Stress: A Mediation Analysis

Anna McHale, Bachelor of Science in Psychology, University of Limerick

Abstract

University is a time in which undergraduate students undergo social re-configuration which often elicits feelings of loneliness. Loneliness is conceptualized as a discrepancy between desired and achieved quality of social relationships. This discrepancy is said to cause mental discomfort or feelings of stress which has been found to impact students' academic progression. This study investigated whether two forms of social support; relational and online social support, acted as mediators between the loneliness-stress relationship in undergraduates. The study was conducted online through various social media platforms and consisted of 155 students from various universities. Results indicated that both relational and online social support did not mediate the relationship between loneliness and stress. However, the relationship between loneliness and stress was still found to be significant. In line with the stress-buffering hypothesis, a possible explanation is the sample did not capture a mediation effect as it mainly consisted of moderately stressed individuals and social support has been suggested to only be advantageous to stress when individuals are severely stressed. Further research could investigate this in relation to individual's experiencing social re-configurations in highly stressed environments such as immigrants, elderly people and perhaps people who are grieving the loss of a loved one.

The nurses' role in medication management in the care of patients with Parkinson disease, a review of the most recent evidence

Hannah Murnane, General Nursing, University of Limerick

Abstract

Parkinson disease is a complex neurodegenerative disease involving the degeneration of dopaminergic neurons which are necessary for movement. Presently the cause isn't fully understood and there is no known cure. Medication is an effective treatment intervention to support people with Parkinson's disease to live as independently as possible. Medication adherence for Parkinsons patients can be problematic especially as the disease progresses and medication regimes become more complex increasing the risk of poor compliance such as, wrong doses and mistiming of doses increases. The consequences of mis-managed medication for the patient can be quite debilitating. This review will identify the most recent evidence exploring nurses' role in medication management in the care of patients with Parkinson disease.

This focused review identified journals from the time period of 2020-2021. N=5 journals were selected as good sources of research relating to the research question. The title and abstract of all journal articles were searched resulting in n= 27 articles. Research articles identified were further screened against the inclusion criteria and n=5 articles were considered suitable to answer the research question. The findings from the selected studies were mapped systematically to a pre-defined template. This data was analysed to identify patterns and gaps in the literature.

Due to the degenerative nature of Parkinson disease, medication management and adherence becomes more difficult and challenging as time progresses. Therefore, nursing staff who work closely with patients are influential in promoting and maintaining patient well-being though medication management interventions. Patients view nurses as good accurate sources of medication education and support. Nurses need to be creative in how they encourage adherence for example the use of aps and technology. For nurses to be effective they need to have knowledge of the disease, medications and methods of administration and be advocates for their patients.

An Investigation into the Prevalence, Financial Implications and Individual Burden of Injury Experienced by Amateur Team Sport Athletes

Rachel Murphy, BSc Sport and Exercise Science, University of Limerick

Abstract

INTRODUCTION: Due to the growing participation levels in amateur sport and the high level of burden potentially placed on athletes by sport injury, reducing the risk of injury and providing support to injured players is essential. The aim of the current study was to investigate the prevalence and the financial cost of injury, while also exploring the individual experience of amateur team sport athletes and the burdens associated with injury. **METHODS:** The present study reviewed and synthesised injury incidence information and insurance claim expenses from studies reporting on rugby, Gaelic games and soccer. Semi-structured interviews were conducted with 12 previously-injured athletes to examine

their experience during injury onset, rehabilitation and return to play. Qualitative data were examined through a thematic-analysis. **RESULTS:** Results indicated that Gaelic hurling had the highest injury incidence (82.1 injuries per 1000 player hours), with all male sports having a greater injury incidence rate than their female counterparts. Moderate-severe injuries in Rugby Union accounted for the highest number of insurance claims in New Zealand (5,045 claims annually) and reports on Gaelic games in Ireland estimated a mean of 8 million euro is spent each year on sport injury claims. Findings from the thematic analysis indicated that athletes experience physical, financial and psychological burdens during the three phases of injury, with the most frequently discussed burden being reinjury. **CONCLUSION:** The results from the current study provide a rationale for the importance of the implementation of injury prevention strategies and offer a better understanding into the individual experience of injury which will allow physiotherapists and coaches to better support an athlete through the recovery and return to play process.

Modelling skeletal muscle cell aging on a dish using human plasma and myogenic progenitors derived from human pluripotent stem cells

Hannah Nyman, Biomedical Engineering, University of Limerick

Abstract

Sarcopenia, the degeneration of muscle mass and function with age, currently lacks effective prevention and treatment. To better understand muscle aging, *in vitro* experiments utilizing human pluripotent stem cell(hPSC)-derived myogenic progenitors (skeletal muscle stem cells) were performed to study non-cell-autonomous aspects of skeletal muscle cell aging. Previously, treatment with pooled sera from old and young rats showed that old sera decreased whereas young sera increased expansion rate and muscle differentiation of hPSC-derived myogenic progenitors in culture. This experiment sought to verify the results using human plasma pooled from 6 young and 6 old female donors. Consistent with previous results, compared to hPSC-derived myogenic progenitors treated with young plasma, treatment with old plasma caused a reduced growth rate at undifferentiated stage and impaired myotube formation following terminal differentiation of myogenic progenitors. These results imply that the systemic biokinetics of aged individuals contains components that impair self-renewal capacity and differentiation potential of myogenic progenitors. More insights into this mechanism would help improve the therapeutic approaches for age-related muscle wasting.

The impact of the utilisation of telehealth on primary mental healthcare service delivery

Deirdre O'Brien, BSc Nursing Mental Health, University of Limerick

Abstract

This focused mapping review and synthesis aims to identify, how the utilisation of telehealth impacts upon primary mental healthcare practice? Journals published from January 2021 to September 2021 were searched for articles that were relevant to the focused review question. The articles were reviewed, themes identified in the articles were mapped and synthesised. The implications for practice discussed. COVID-19 social distancing guidelines caused a rapid transition to telehealth in the delivery of primary mental healthcare. Social distancing restrictions and remote working strategies recommended by the World Health Organization were adopted universally in the healthcare sector to curtail the spread of the corona virus. Modalities of primary mental healthcare delivery changed. The implications of this expeditious transition and the COVID-19 pandemic have resulted in the expansion of work for front- line workers, increased the complexity and the intensity of work. This focused mapping review and synthesis will identify themes, map, and synthesis the findings, discuss the implications for practice.

The challenges adults with intellectual disabilities encounter when accessing healthcare services

Beatriz Ortega, BSc Nursing (Intellectual Disability) , University of Limerick

Abstract

Introduction: Adults with intellectual disability have been identified as having higher health care needs than the general population. However, their health needs often go unnoticed and unmet due to their illness not being recognized. Research has outlined high rates of mortality and morbidity due to poor hospital care delivered with reports of many of these people often dying early due to avoidable causes. The aim of this review is to explore the challenges they face while accessing healthcare services.

Methods: A focused review was conducted searching five academic journals identified through databases. N=5 journals from the period of 01/09/20 to 01/09/21 for studies identifying research relating to the nursing, disability, and healthcare topics. Resulting in n= 4 articles. The findings from the selected studies were mapped systematically to a pre-defined template. This data was analysed to identify patterns and gaps in the literature.

Results: Poor communication was the main issue seen across all four studies. Participants experienced lack of person-centred care as they were not directly involved in their own care and having limited interaction with the healthcare team. The lack of understanding of intellectual disability negatively impacted the care and support when accessing hospital facilities due to the inadequate clinical assessments and management of nursing interventions.

Discussion/conclusions: Such challenges need be addressed so that people with intellectual disability receive health care equity and improved healthcare outcomes. The findings from this study highlight the most current evidence in this area and will increase the awareness for change in practice and attitude of healthcare providers. This study recommends the expansion of the role of the intellectual disability nurse working in acute hospital settings. Increased educational training concerning intellectual disability for all healthcare providers and the use of health passports to aid effective communication and care that is person-centred.

An analysis of gender in the discipline of economics

Lorcan O'Sullivan, Bachelor of Arts with Economics and Politics & International Relations,
University of Limerick

Abstract

The underrepresentation of women in economics has been largely identified as a significant issue, in countries such as Australia and the United Kingdom. This thesis aims to summarise much of the literature already available, whilst also extending this analysis to Ireland. As an economics student myself, the gender imbalance prevalent across much of the discipline is strikingly evident throughout many of the modules I have undertaken during my undergraduate career thus far. As such, I felt the need to explore much of reasoning behind the visible underrepresentation of females across much of the discipline. By examining much of the previous literature conducted in both Australia and the United Kingdom, I was able to identify matching trends which exist amongst much of academia in Ireland, where we must work to improve the current situation. Efforts to increase female representation within the discipline can be seen across all three countries mentioned within this thesis, although there still remains so much to do for females within economics, particularly at student level. Findings from all three countries researched within this final year project remain incredibly patterned, with the majority of trends over the last number of decades remaining relatively stationary at best, it is imperative that we work as a collective to rectify the gender imbalance problem prevalent within economics.

To identify how paediatric palliative care has been affected by the Covid 19 pandemic?

Elizabeth Quinn, BSc Nursing (General), University of Limerick

Abstract

Background: Paediatric palliative care nursing is and the active and complete approach to care from the day the child is diagnosed through to death and beyond while focussing on enhancing their quality of life and family support. Paediatric palliative care is a very sensitive and difficult area in nursing especially during a global pandemic. Since the beginning of the COVID-19 pandemic palliative paediatric care delivery has adapted rapidly and implemented changes to address public health guidelines. The aim of this focused review is to identify how the COVID-19 pandemic has affected the care of children in the palliative care services.

Methods: A focused review process was used targeting journals relevant to field of inquiry, a specific subject area and a defined time period (12 months) (Bradbury-Jones et al. 2019).

N= 4 research articles met the inclusion criteria to answer the research question. The findings from the selected studies were mapped systematically to a pre-defined template. The data was analysed using thematic analysis to identify patterns and gaps in the literature.

Findings: This review has identified changes in inpatient paediatric palliative care delivery during the COVID-19 pandemic. It was found that technology has had a great effect on communication between families and clinicians during the pandemic. The over use of technology took away the personal touch to caring and staff were not confident in the accuracy of their health assessments and especially when the giving of “bad news”. Covid enforced physical distance impacted on staff, families and patients increasing personal stress and loneliness. Adding to the stress was the fear of getting Covid and passing it on to loved ones and patients.

Conclusion: This paper clearly identifies the impact of the Covid 19 pandemic on paediatric palliative nursing care. The findings of this study can inform future planning for possible future pandemics.

Courtiers, *Conquistadores*, and Administrators: Imperial Expansion and Domestic Unrest During the Early Years of the Spanish Empire

Cian Rowan, BA Arts, University of Limerick

Abstract

In the early 1520's Spain found itself at a crossroads. The Habsburgs had inherited the thrones of Castile and Aragon, perpetuating the Iberian union begun by the Catholic Monarchs. The question now was whether the fledgling Spanish empire would continue to expand under Habsburg auspices, or collapse under the weight of domestic dissatisfaction and revolt. The pressure of these factors fell squarely on the shoulders of the young Charles V and his government, neither of which was adequately prepared at the time. Despite a dangerously unstable beginning to the reign, Charles and Spanish empire emerged all the

stronger for having been tested.

This project seeks to examine the two main challenges of Charles' early reign, namely the revolt of the Comuneros of Castile, and the rebellious Hernan Cortés in the New World. In doing so, it will provide a unique perspective on how revolt shaped Spanish imperial policy throughout the 1520's and beyond. By studying the two revolts together, it will be possible to better understand the purpose of Spanish administrative reform early in the reign,

and how this reform managed to effectively end the trend of revolt and disobedience in Charles' possessions. The end of this project will leave both Spain and its new possessions in a position of strength, ready to march into a century of Spanish dominance in Europe and the wider world.

Witchhunts: Investigating the relationship between trial records and print media in Bamberg and Würzburg, 1600- 1632

Ciara Sheehan, BA Arts Joint Honours (German with History), University of Limerick

Abstract

This paper discusses the relationship between witch trials (*Hexenprozesse*) and the reports of witchcraft in print discourse (collectively termed *Hexenzeitungen*) between 1600 and 1632. Franconia is considered one of the main flashpoints for witch trials in the early modern Europe and the waves of persecutions in Bamberg and Würzburg were among the largest in the seventeenth century. Though witchcraft studies is a broad area of historical research, there is very little analysis regarding the role of written discourse. Existing evidence supports the notion that judicial records and pamphlets distributed criteria for witchcraft, tales of the people accused of the crime and contemporaneous accounts of the communal response.

Bamberg and Würzburg have similar characteristics: both are Franconian cities, governed as Catholic prince bishoprics with closely connected rulers and they merit the accolade of being the epicentres of the most bloodthirsty systematic executions of their time. Unfortunately, extant documents in their entirety are scarce. Debate about the reliability of source material in a cultural context, particularly in the case of pamphlets and broadsheets, is ongoing. There are also other elements, such as urbanisation, literacy and perception, and other social contexts to consider in compiling research of this nature. By combining primary sources from both cities, it can be possible to assess how this phenomenon was affected by the correlation between print discourse and judicial records. Thus, new opportunities for

similar engagement with print discourse in witchcraft studies may arise from considering this relationship.

The Removal of Valuable Metals from Aqueous Solutions using Adsorption

Paul Tasker, B. Sc. Pharmaceutical and Industrial Chemistry, University of Limerick

Abstract

Heavy metals are defined as elements with densities between 3.5-7g/cm³ and are capable of having significant potential for harm in humans, animals, environmental systems, and other organisms. Such pollutants enter environmental systems through human processes like mining, manufacturing, and domestic processes, and their aqueous concentrations are typically higher in third world countries which suffer from a distinct lack of either environmental policy or legislative enforcement.

While many techniques exist which are capable of aqueous metal removal, adsorption is particularly noteworthy due to its selectivity, high capacity, fast kinetics, and innate design and operation flexibility. Adsorption is the phenomenon by which species adhere to solids, producing a thin layer of the adsorbed species on the solid surface. Aqueous species, such as waterborne pollutants (adsorbates), can be sequestered (adsorbed) onto the solid surface (adsorbent). The solution can then be filtered, and the adsorbent (with the adsorbed species) can be easily separated from the aqueous system. Depending on the adsorbent and its functional groups (which can be modified,) selectivity can be inferred. This body of research serves to identify metals which are 1) abundant in real-world scenarios, 2) economically viable for removal, and 3) toxic to biological systems. This research also investigates if these metals can be removed via adsorptive processes, how such processes operate kinetically and thermodynamically, identifies accurate adsorption models for subsequent processes, and identifies if any interference occurs between adsorbates competing for active sites. Their removal was investigated using adsorbents which are common, low-cost, and easily modified.

Chitosan, cellulose, and biochar were selected as cheap adsorbents, and copper, nickel, and silver were chosen as target metals due to their abundance, toxicity, and economic value (respectively). These unmodified adsorbents were used in single, binary, and ternary metal systems to identify their mode of adsorption, capacities, and competitive interactions between adsorbates.

Patient and Family Experiences of Advance Care - A Focused Mapping Review

Elaine Walsh, Bsc Nursing (General), University of Limerick

Abstract

Advance Care Planning (ACP) is a process that respects and supports the individual patient together with their family to make decisions for future care during serious and chronic illness that aligns with their beliefs, values and preferences. ACP is associated with palliative care

and end of life care where patients may not be able to communicate their care preferences. ACP is relatively new in Ireland and the uptake remains low despite the many known benefits. Therefore, this review explores the most recent evidence of patient and family experiences of ACP.

This 'Focused Mapping Review' (Aveyard and Bradbury-Jones 2019) identified n=22 relevant to the field of study. Journals were searched using the inclusion criteria and a specific time-period of July 2020- July 2021. Each journal was searched by reading title and abstract of each journal's contents, resulting in n= 22 articles. Full text searching n=5 articles met the research question criteria. Analysis was assisted through the development of a pre-defined data extraction table enabling the identification of patterns in the literature.

Patients and families feel they are not provided with sufficient information on disease progression and ACP. Communication with healthcare professionals is often hard to understand. When communication was good, patients were more likely to engage in ACP. Patients found it difficult to initiate the conversation and felt that this should be the responsibility of healthcare staff, and the ACP conversation should occur earlier rather than later in the illness journey. Patients believed health workers did not value or realise the importance of providing information necessary to make informed decisions.

The findings from this review indicates that nurses and other healthcare professionals need to be knowledgeable and skilled in initiating and facilitating ACP conversations with their patients and their families so that positive patient outcomes can be achieved.

Does paediatric Sepsis Screening Assist in the Early Recognition of Sepsis in Children in Hospital Setting?

Ciara Walsh, BSc Nursing General, University of Limerick

Abstract

Introduction

Paediatric sepsis is the leading cause of death worldwide in children. Early recognition improves outcomes but can be difficult due to the non-specific clinical presentations of paediatric sepsis. Sepsis screening assists in the recognition of paediatric sepsis and their use is recommended through national guidelines. However, there is a lack of evidence on the effectiveness of sepsis screening in addition to poor clarity on which sepsis screen should be used.

Aim

To establish if paediatric sepsis screening assists in the early recognition of sepsis in children in the hospital setting while identifying the different types of paediatric sepsis screening tools used.

Methods

This focused mapping review involved completing a comprehensive search across Cinahl and Scopus database to pre-identify five journals on their likelihood of publishing literature on paediatric sepsis. The five pre-identified journals were searched individually for articles published between September 2020-2021 that answered the review question. Data extraction and analysis was completed on the five selected articles and the findings were mapped to the review question.

Findings

There is a gap in the literature on paediatric sepsis screening from an Irish and European perspective. This review found that systematic sepsis screening of children can assist in recognition of paediatric sepsis with automated electronic sepsis screening being superior. Although sepsis screening is effective it is further improved when supported by the nurse.

Conclusion

Paediatric sepsis screening can assist in recognising paediatric sepsis in hospital with automated electronic sepsis screening being superior, which is a significant finding that supports the use of paediatric sepsis screening while clarifying the optimal screening method. Central to the early recognition of paediatric sepsis in addition to the screening is the role of the nurse which needs to be empowered to improve further recognition of paediatric sepsis.

Effects of Transient and Chronic Loneliness on Depression and Psychiatric Distress

Katarzyna Wolska, BSc Psychology, University of Limerick

Abstract

Loneliness has a long established link with depression, however patterns of loneliness, specifically transient (short-term) and chronic loneliness (longer-term), have seldom been researched in terms of their effects on depression and psychiatric distress. We investigated whether chronic loneliness could predict more clinical depression diagnoses and higher levels of psychiatric distress than transient and no loneliness. The study utilised data from Waves 9 and 10 of the Unoorly

derstanding Society survey: a nationally representative sample of adults in the UK ($N=18,999$). The study used a between-subjects, longitudinal design, where participants' scores on loneliness measures across two time points were combined to form patterns of loneliness, and participants were compared on their levels of psychiatric distress and depression diagnoses across the three loneliness groups: chronic loneliness (lonely at both time points), transient loneliness (lonely at one time point) and no loneliness. Regression analyses revealed that patterns of loneliness predicted both the likelihood of participants having a clinical depression diagnosis and participants' levels of psychiatric distress. The chronic loneliness group had the highest likelihood of being diagnosed with clinical depression and had the highest levels of psychiatric distress, compared to both the transient and no loneliness groups. Transient loneliness, in turn, predicted more clinical depression diagnoses and higher levels of psychiatric distress within its group than the no loneliness group. The study replicates prior findings, suggesting that prolonged loneliness can have detrimental impacts on one's mental health.

Posters

Obsessive-Compulsive Symptoms Come to Class Does Symptom Severity Affect Neuropsychological Functioning in School-Aged Individuals?

Mairead Brosnan & Dr. Brendan Delaney, Mary Immaculate College

Abstract

Obsessive Compulsive Disorder (OCD) is a debilitating and chronic anxiety disorder, with research suggesting that both clinical and non-clinical levels of OCD symptom severity may deleteriously affect cognitive and executive functions (Abramovitch et al., 2015; Schachar et al., 2021). This is a particular concern for school-age individuals, as intact cognitive processing is associated with better academic functioning (Diamond, 2016). Research findings are conflicting on the association between obsessive-compulsive symptom severity and cognitive functioning, and previous reviews on adult and clinical populations have not found noteworthy neurocognitive deficits (Abramovitch et al., 2019). However, there is a reduced research emphasis on paediatric and non-clinical samples. Accordingly, this systematic review sought to examine the impact of OCD symptom severity (clinical and non-clinical) on performance in tests of cognitive and executive functioning among school-aged individuals. A list of relevant search terms was applied in a literature search of four databases: Academic Search Complete, MEDLINE, PsycINFO and PsycARTICLES. Articles which emerged from the search were screened using eligibility criteria targeting publication type, linguistic range, measures and outcomes, research design and participant age. Seven studies were identified as appropriate for inclusion in the current review. The selected studies were quality assessed using an adapted version of the APA Task Force Coding Protocol for Group Designs (Kratochwill, 2003) and critically appraised using Gough's (2007) Weight of Evidence framework. Although several significant associations arose for individual tests across five studies, overall findings from the review generated insignificant correlations between OCD symptom severity on neuropsychological test performance in school-going participants. These results may be particularly important for the formulation of educational interventions to specifically target certain cognitive functions. However, review findings should be interpreted with caution due to issues identified in study quality and topic relevance. Implications for future research are discussed.

An Investigation into the Impact of Transitioning to Online Learning During the Covid19 Pandemic on Student Learning and Well-being

Rheanna Byrnes, Jadene Davis, Ciara O'Keeffe

Abstract

The purpose of this study is to investigate the Impact of Transitioning to Online Learning During the Covid-19 Pandemic on Student Learning and Well-being. Covid-19 has caused many changes some of which included the transition from face-to-face learning to emergency remote learning. The objective of this research project was to understand how students felt towards the transition and whether it affected them positively or negatively. As part of our mixed methodological approach, we conducted a survey and distributed it online to undergraduate students attending the University of Limerick. Our findings from the data collected showed that there were mixed feelings towards the transition, several students shared a preference for emergency remote learning and some preferred face-to-face learning. It was revealed to us that student learning had been impacted as the degree of interaction changed and motivation levels dropped when switching to online. Additionally, by the ERL delivery. It was also discovered that there was number of students' whose mental health was affected negatively. Issues were brought to attention regarding the need for more awareness in relation to resources provided by the University to support students. It's important to highlight that student portrayed mixed emotions with the return to campus for face-to-face learning. In conclusion this research project has significantly emphasised that it is a certain possibility that students learn differently in certain environments.

An Examination of Primary School Teachers' Attitudes Toward Engaging in Assessment for Learning

Maeve Mc Carthy, Bachelor of Education and Psychology, Mary Immacualate College

Abstract

Assessment for learning (AfL) is a methodology currently being used by teachers in the Republic of Ireland to guide their use of formative assessment practices. AfL involves the teacher continuously collecting information about what the students are learning through strategies such as questioning, discussion and self-assessment. Research has shown that AfL has numerous benefits such as promoting independent learning and encouraging differentiation. Little is known, however, about the role of teacher attitudes, subjective norms and self-efficacy in their engagement of formative assessment practices. Previous research is dominated by quantitative approaches all of which are conducted in other countries. Thus, to address the cultural and methodological gap, the present study utilised

a qualitative approach to explore Irish primary school teacher's attitudes, self-efficacy and subjective norms toward AfL. The Theory of Planned Behaviour was chosen as the psychological framework to underpin this study. This framework is appropriate as it allows the relationship between attitude and behaviour to be explored. Participants comprised of six primary school teachers from five different primary schools. Semi-structured interview questions were devised by the researcher and participants were interviewed on a one-to-one basis. Thematic analysis was used to interpret the interview data and the following themes were identified; i) Behavioural intentions toward AfL; ii) Attitudes toward AfL; iii) Normative Beliefs Toward AfL; iv) Self-Efficacy toward AfL. Results were inconsistent with previous findings as they found that negative attitudes and low self-efficacy did not deter teachers from engaging in AfL. However, findings illustrate that participants' subjective norms such as their colleagues and principal strongly encouraged their engagement in AfL practices. Future research which addresses the current study's limitations will provide an opportunity to further explore teacher attitudes, subjective norms and self-efficacy toward AfL.

Comparing the effectiveness of mindfulness versus exercise in reducing perseverative cognition and stress

Avril McSweeney, B.Ed in Education and Psychology, Mary Immaculate College

Abstract

Perseverative cognition (PC) and stress have been found to cause sickness behaviours, such as cardiovascular diseases, diabetes, and migraines, when left untreated (McCarrick et al., 2021). Despite the vast amount of evidence conveying the prevalence of stress in college students, little research has looked at the extensiveness of perseverative cognition. Moreover, there is a notable absence of research examining the effectiveness of interventions in mitigating the negative impact of PC on individuals. The aim of the current research project is to compare the effectiveness of an exercise intervention versus a mindfulness intervention, in reducing the presence, frequency, and impact of perseverative thinking and stress in college students. Personality was included as a covariate variable to establish any potential correlations between personality traits and the effectiveness of the intervention. This study employed a 3x2x1 factorial design. Forty-eight college students between the ages of 18-24 were recruited for this study. Participants were randomly assigned to one of three groups; mindfulness intervention, exercise intervention, and control (N=16). Participants completed the Perceived Stress Scale (Cohen et al., 1983), Perseverative Thinking Questionnaire (Ehring et al., 2020), and the Big Five Personality Inventory (John et al., 1991) at the baseline stage of the study. After two weeks of engaging with the assigned intervention task, participants' stress and PC levels were measured again. A two-mixed analysis of variance (ANOVA) revealed that both the mindfulness

intervention and the exercise intervention were effective in reducing PC and stress in college students. A one-way ANCOVA showed a significant relationship between neuroticism and difference in PC levels from pre to post intervention. This study highlights the potential benefits of mindfulness and exercise in reducing stress and PC, and emphasises the need for further research to include personality as a factor influencing the effectiveness of intervention.

How do females experience bias in education and what changes can we make to our primary and secondary education systems to promote a gender equal world?

Sinead O'Brien, Daire Davern, Sarah O'Rourke, Ciara Duffy. Engineering, University of Limerick

Abstract

As our research study is based on the bias in primary and secondary schools, we wanted to create a classroom friendly poster which highlights different activities which can be undertaken in schools, to create a more welcoming environment for young girls wishing to pursue a career in STEM.

After attending all-girls secondary schools, we believe that a wider range of STEM subjects should be offered in all-girls schools. A study conducted by the Deputy Chief Inspector, Gearóid Ó Conluain and published by Department of Education & Science in 2008 found that Materials Technology and Construction Studies was offered in 83% of Co-Ed Schools, 17% of all boy's schools and 0% of all girl's schools. Instead subjects such as music art and home economics are accommodated for. This highlights the amount of talent we are losing by not being given the chance to try.

The promotion of WiSTEM campaigns such as International Women's day brings awareness to the opportunities available to young women in STEM. It celebrates women's achievements and raises awareness to the bias faced by women in industry this can be further achieved by the presence of female role models and industry mentors.

Other campaigns we believe could highlight the importance of WiSTEM to students is a STEM Women in History day and the setting up of STEM centres. STEM Women in history day would celebrate the achievements of women such as Marie Curie, Mae Jemison and Rosalind Franklin, while STEM centres will provide advice to students on career paths and programs available to them in STEM fields.

Participation in Transition year STEM programs such as the BT Young Scientists Program and the promotion of female apprenticeship programs can also aid in opposing the bias faced by women in stem.

Minding Young Minds: Investigating the perceived self-efficacy of Irish primary school teachers in relation to supporting students' social and emotional wellbeing in the classroom

Sarah O'Donnell, Bachelor of Education and Psychology, Mary Immaculate College

Abstract

Supporting the social and emotional wellbeing of primary school pupils is an endeavour to be undertaken by teachers in Ireland, as stipulated by the Department of Education and Skills (2018). Internationally, the influence that factors can have on teacher self-efficacy for supporting wellbeing has been investigated. Furthermore, the extent to which Bandura's four sources of self-efficacy, including mastery experiences, vicarious experiences, verbal persuasion and psychological and affective states can have on teacher self-efficacy has been explored (Bandura, 2001). Thus, the focus of this study was to investigate the self-efficacy of Irish primary teachers in relation to supporting wellbeing, and the factors that influence this self-efficacy. This study employed a quantitative, cross-sectional, correlational research design. 109 teachers employed in Irish primary schools completed a demographic questionnaire to detail age, number of years of qualified teaching experience and gender. Participants completed adapted forms of the TSESSW and TSESSW-S scales to measure overall self-efficacy and sources of self-efficacy (De George-Walker, 2010). Results revealed that teachers feel highly confident in relation to supporting wellbeing, as a mean score of 221.8 was obtained on the TSESSW scale, out of a total score of 280. In addition, verbal persuasion was the only source of self-efficacy to significantly predict self-efficacy ($p = .037$). Age was the only significant demographic predictor of self-efficacy ($p = .050$). Findings suggest that the wellbeing of primary pupils is being supported by highly confident educators in Ireland, and that verbal persuasion and age should be considered in the enhancement of teacher self-efficacy.

How do females experience bias in the workplace and how can we address it to ensure that the workplace is free of bias, stereotypes and discrimination?

Niamh Quinn, Aodha Marrinan, Caoimhe Cahill, Sandra Donatus

Abstract

Oxford dictionary defines bias as a “strong feeling in favour or against one group of people or one side in an argument often not based on fair judgment.” Bias is felt by women across the globe and fear of facing bias can discourage women and girls from pursuing their dream career. This poster highlights the types of bias that women face when entering the workforce and offers some solutions to tackle them. When researched, the most common types of bias experienced by women today were maternal bias, performance bias, attribution bias, affinity bias and likability bias. From a research study conducted by the Harvard Business Review where they surveyed 557 female scientists and interviewed 60 of them, it was reported that two-thirds of women surveyed and interviewed had to prove themselves repeatedly, had their successes discounted and expertise constantly questioned while at work. In the same study, women surveyed felt a pressure to play a more feminine role in the workplace and some reported facing backlash for displaying typically masculine traits such as speaking their minds. Even when in more traditionally male dominated roles, women often still end up doing “office housework” such as cleaning up after meetings, ordering lunch for their male co-workers, and organising events. Women feel like they need to conform to more feminine roles but take on more than their male counterparts to prove themselves capable.

The poster also suggests solutions that can put into practice to tackle the bias faced in the workplace. One of the best solutions is to educate employees on the types of bias faced by women and the harmful effects of this bias. It is only then that women can truly be equal to men.

The Mind Matters - Primary School Teachers' Perspectives on Supporting Primary School Children's Mental Health and Well-Being in Mainstream Schools.

Dearbhaile Roe, B.Ed in Education and Psychology , Mary Immaculate College

Abstract

The WHO (2016) outlined that the prevalence of mental health problems in childhood is increasing worldwide. Research by RCSI stated that 1 in 3 children in Ireland will experience some form of mental health issue by the age of 13 (Cannon et al., 2013). This qualitative research, incorporating semi-structured interviews and reflexive thematic analysis, explores the under-researched area of primary school teachers' perspectives on supporting primary school children's mental health in the Irish context. Aligned with the Biopsychosocial model, it focuses on the nature of teachers' role, perceived supports and barriers, alongside how equipped teachers feel.

Results show that although teachers view their role as crucial, intrinsic and collaborative, they evidently rely on external supports. However, a concerning situation exists whereby external supports are under-resourced and the referral system is deficient in meeting current needs. In contrast to supporting well-being, teachers feel ill-equipped in supporting aspects of children's mental health as they have received little to no formal training in the area. Nevertheless, teachers' strategies support and show awareness of the BPS model which is regarded in research as an optimal holistic and strength-based model of support. Moreover, teachers are showing initiative through CPD and self-study to implement an array of supports to navigate barriers such as insufficient external support, lack of training, time constraints, curriculum challenges, lack of policy development and the implications of the pandemic, namely school closures and a renewed hyper-focus on core subjects.

Main findings indicate that teachers need training in supporting mental health, external services need more investment and that the primary school curriculum should be reviewed, particularly relating to SPHE.

Key words: mental health, primary school teachers, supports, barriers, external support

Tyndall Smart Glove Workshop for Transition Year Students

Tara Ryan, Bachelor of Science with concurrent Teacher Education, University of Limerick

Abstract

The Tyndall Smart Glove is a wearable glove that uses sensors to track a person's hand movements to project a perfect replica onto a screen. When on teaching practice, I found my students' digital literacy skills to be poor. Many found it difficult to even login to the Microsoft Teams account. This workshop aims to provide a steppingstone to students' possible future careers and alter their preconceived perceptions of technology.

The aim of this workshop is to:

- Promote technology as a career to younger people.
- Give students autonomy in their learning and experimental discovery.
- Create a realistic experience of how scientists and engineers solve problems and design solutions.

The purpose of this workshop is to increase student autonomy. Students take ownership of their learning by designing and carrying out their own experimentations and presenting their findings on a webpage that they learnt how to create. The workshop goal is to deconstruct stereotypes of the people working in STEAM and their roles, by highlighting its broad applications and careers, through an accessible, thought provoking and enjoyable experience, focusing on the invention and applications of the Tyndall Smart Glove.

Association of maternal wellbeing in pregnancy and offspring adiposity at 5 years – findings from the ROLO longitudinal birth cohort study.

Ruby Wall, Biomedical Health & Life Science, University College Dublin

Abstract

Background: Emerging data suggests that maternal mental and emotional health during pregnancy may influence the offspring's risk of excess childhood adiposity. **Objective:** To determine the relationship between maternal wellbeing in pregnancy and offspring adiposity at 5 years. **Methods:** Mother and child pairs (n = 338) participating in the ROLO study, a longitudinal birth cohort, had assessments performed at birth and 5-years follow-up. The assessments included anthropometry, skinfold measurements. The WHO-5 wellbeing index scores were classified as high (>50%), moderate (28-50%), or low (<28%). Data were analysed using Independent sample t-tests, Pearson's correlations, analysis of variance (ANOVA) and multiple linear regression. Confounders included in regression analysis were: child age at 5-year follow-up, membership of intervention group, child sex, maternal BMI at 5-year follow-up, infant feeding, maternal education, and birthweight. **Results:** Mean (SD) age of mothers was 32.45 (4.19) years, with a median (IQR) body mass index (BMI) of 25.67 (23.27 - 28.8) kg/m². At 5-years, the BMIs of children ranged from 75.1% (n=290) in the healthy range, 20.7% (n=80) overweight, and 4.2% (n=16) in the obese range. The mean (SD) wellbeing of mothers was 58.2 (15.45) % and 22% of mothers had wellbeing of <50%. Mean android-gynoid ratio was significantly different in children of mothers with low wellbeing compared with mothers who had high wellbeing (0.34 (0.07) vs. 0.27 (0.06), p = 0.014). Children born to mothers of moderate wellbeing had increased child thigh circumference compared to mothers of high wellbeing (33.30mm (2.86) vs. 32.59mm (2.9), p = 0.049). In adjusted analysis, an inverse association was observed between maternal wellbeing and child's thigh circumference (B = -0.155, 95% CI = -0.049, -0.009, p = 0.004). **Conclusions:** Lower maternal wellbeing may be associated with increased offspring adiposity. Further investigation is needed to confirm these findings and the potential mechanisms underlying this relationship.