

APPLIED PSYCHOLOGY IN POLICING SETTINGS



16 April 2025

10am to 4pm

**Kings College Conference Centre
University of Aberdeen**

#APPS2025



Welcome to the Applied Psychology in Policing Settings Networking Event 2025!

Dear Delegates,

Once again, welcome to our networking event. We look forward to your active participation and hope that you find this event informative, engaging, and rewarding.

Warm regards,

Your co-convenors

Eva, Penny, and Julie



Dr Eva Rubinova
University of Aberdeen
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Dr Penny Woolnough, Abertay University
SIPR Associate Director, Evidence & Investigation
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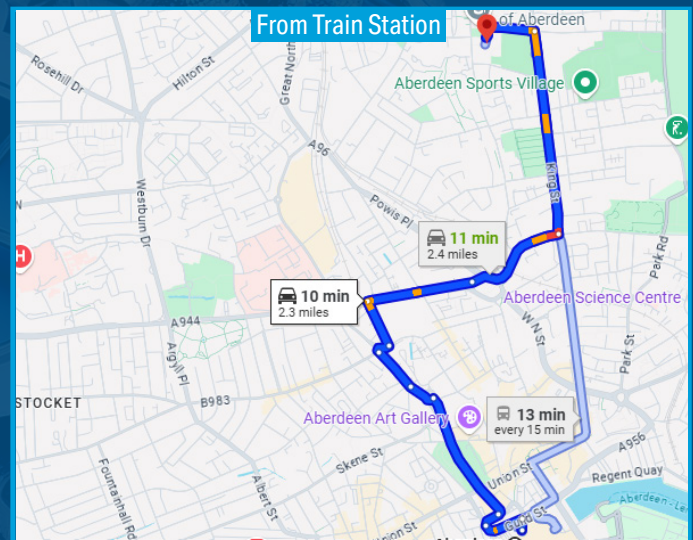
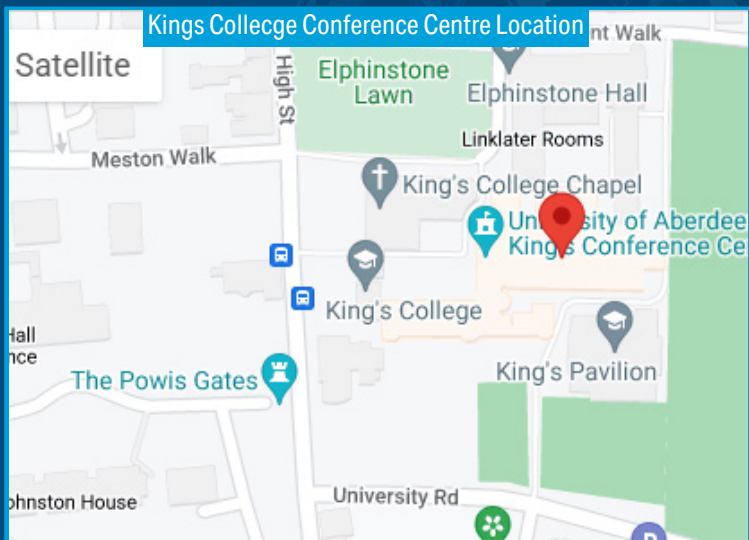
Dr Julie Gawrylowicz, Abertay University
j.gawrylowicz@abertay.ac.uk

Directions

The event will take place in the most notable of Aberdeen University's conference and event facilities, the King's College Conference Centre, providing the perfect combination of modern facilities within historic surroundings.

The Conference Centre is housed in the former University Library, constructed in 1870, the entrance to which is directly in line with King's College's main entrance arch. The building ceased to be used as a library in the early 1980s and was converted into the Conference Centre in 1991.

Directions can be found below alongside a map of the Conference Centre.

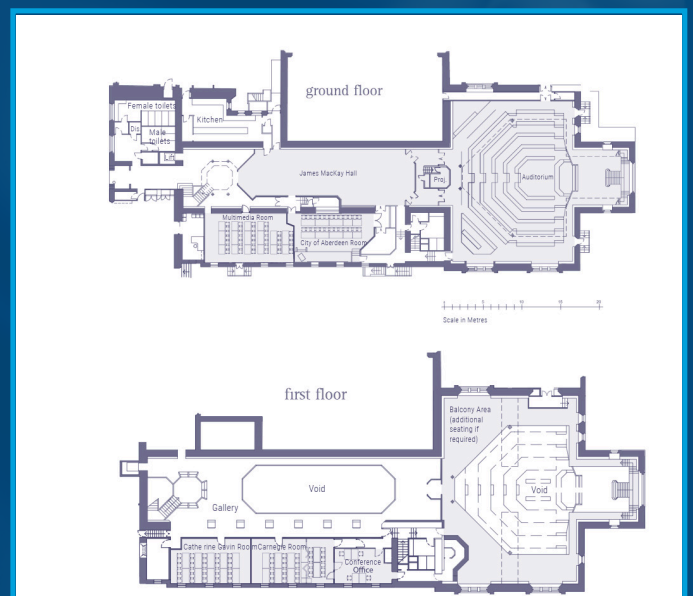


Directions from Aberdeen Train Station to Kings College Conference Centre:

Exit Aberdeen Train Station and head to Union Square. Walk towards Guild Street, continuing to South College Street.

Turn right onto King Street and continue walking north. Turn left onto High Street, and you'll reach Kings College and the Conference Centre.

It's about a 15-20 minute walk (1 mile) from the station. Keep an eye out for the University of Aberdeen signs along the way to guide you directly to the venue.



Event Programme

10:00 - 10:20 Registration & Refreshments

10:20 - 10:30 Welcome & Event Outline

10:30 - 11:30 **Presentation Session 1 - The use of impact of AI and emerging technologies in policing research and practice**

Novel Markers of Concealed Face Recognition: Emerging Technologies for Future Policing

Dr Ailsa Millen

In policing, suspects might deny recognition of criminal associates during interviews. To address this problem my research develops novel Concealed Information Tests (CITs) for face identification. In this talk, I will present my research on objective markers of concealed face recognition. The talk will highlight the potential of emerging technology for identifying concealed face recognition, and the importance of understanding individual differences in this context. I am looking forward to discussing how these novel approaches could be integrated into policing and investigative practices, and how AI might be used to create and optimise Concealed Information Test line-ups. I will also be happy to discuss my related research on "public perceptions of technology in the criminal justice system" and "advancing human-avatar interactions in policing and defence," both of which highlight the importance of understanding cognitive and cultural diversity in these contexts.

What makes us look human? The curious case of hyperrealistic AI

Dr Clare Sutherland

In this talk I will discuss the advent of generative artificial intelligence (AI) models of human faces, and what this new technology means for people's ability to tell apart real human and 'deepfake' AI face images. I'll discuss our recent international work showing that people now cannot tell the difference between real and AI faces, and that in some cases, AI faces look more realistic than do real human faces - a phenomenon we term 'AI hyperrealism'. I'll also draw on our investigations into the visual cues that distinguish real and AI faces, discuss which aspects of human perception are accurate (and which are inaccurate), and outline individual differences in how accurately different people are able to identify AI faces. I welcome an open discussion about the societal impacts of this technology and how we can collectively act to ensure that AI technology is used for the benefit of the public, minimising harm.

Improving eyewitness identifications with confidence

Dr Travis Seale-Carlisle

Many believe eyewitness memory is unreliable, and for good reason. Research shows memory is highly malleable, to the point where people can confidently recall traumatic events that never happened. Moreover, mistaken eyewitness identifications—often made with high confidence in court—have contributed to over 70% of the 358 wrongful convictions overturned by DNA evidence since 1989.

However, recent studies show that eyewitness confidence is a strong indicator of accuracy when measured during an initial, uncontaminated lineup. When these conditions are met confidence and accuracy are strongly related such that low confidence indicates low accuracy while high confidence indicates high accuracy. Crucially, in every DNA exoneration case where initial confidence was documented, the witness initially expressed low confidence, highlighting that their identification was error-prone and unreliable.

There is now widespread agreement among researchers on the strong link between initial confidence and identification accuracy. Many countries have updated their policies to require documentation of eyewitness confidence from the initial identification. Despite its rigorous lineup procedures, the UK does not mandate collection of confidence statements. Implementing this simple reform would improve the reliability of eyewitness identification evidence and help prevent wrongful convictions. The time has come for the UK to follow suit.

Automated face recognition assists with face identity mismatches, but can bias users and its decisions are commonly (and often incorrectly) overruled by humans.

Dr Anna Bobak

Automated facial recognition (AFR) systems are becoming increasingly prevalent in society, yet they require human oversight. Our research was the first to analyse outcomes from a state-of-the-art AFR system applied to an ethnically diverse set of faces with a low-prevalence mismatch rate while also testing a varied participant group from the London area. Even though participants were accurately informed about the system's high level of accuracy, they frequently overrode its decisions, resulting in only slight improvements in overall performance. Notably, when presented with a binary AFR decision (match or mismatch), participants quickly adopted a liberal response strategy, increasingly favouring 'match' at the expense of 'missing' mismatches – a costly error during important identity checks. Our findings showed no clear link between AFR aided accuracy and trust in AFR, nor did participants' perceived accuracy of the system correlate with their actual performance. Importantly, those who only received the binary decision (match or mismatch), rather than a 'similarity rating' tended to be overly confident when assessing face pairs near the AFR's decision threshold. In contrast, participants given similarity ratings effectively incorporated this information into their judgments. Based on these results, we recommend that users always have access to the AFR similarity score.

Event Programme

11:30 - 12:00 Breakout Session 1

12:00 - 12:45 Lunch Break

12:45 - 13:45 **Presentation Session 2 - Working with vulnerable groups: Trauma management and evidence collection**

Using Human and Non-Anthropomorphic Avatars in Investigative Interviews with Young People

Sam Conway

This PhD research investigated the effect of human-operated avatars on the quality of young people's disclosure, episodic recall, and susceptibility to false information among young people (11-17 years old). Using a mock investigative interview paradigm, Study 1 compared human interviewers with human-appearing avatars, also manipulating whether avatars were of the same or opposite sex as participants. Study 2 compared human interviewers with non-anthropomorphic avatars (a faceless, disembodied shape). Across Study 1 and Study 2 avatar interviewers, regardless of their visual appearance, elicited comparable levels of disclosure and eyewitness recall as human interviewers. Study 3 explores the opinions of Scottish child forensic interviewers on the challenges and benefits of introducing avatar-based interview methods in practice. Three themes were generated through reflexive thematic analysis. There was a willingness among practitioners to adopt avatar technologies with young people, recognising that technology fosters rapport-building with young people (Theme 1). However, this was offset by some concerns over how avatars might create an emotional detachment from young people compared with face-to-face interviews (Theme 2). Practitioners also discussed the court's lack of child-centric approaches and anticipated avatar-elicited evidence would be scrutinized (Theme 3). The practical implications of these findings are discussed, alongside future research directions. Using virtual reality to study and improve eyewitness testimony

Using virtual reality to study and improve eyewitness testimony

Dr Rui Paulo

Witnesses play a critical role in criminal investigations, but cognitive processes such as memory often influence their ability to recall important details. To address this, psychologists developed science-based interview techniques that improve witness memory and statements. Our team also created new retrieval strategies (e.g., Category Clustering Recall) that the police is already using to interview witnesses, victims, and informers in cases of kidnap, arson, extortion, fraud, and trafficking.

However, much of the research supporting the use of these techniques employed a mock-witness paradigm, where participants observed a crime on a 2D screen. This does not accurately reflect real-life eyewitness experiences, raising concerns about the effectiveness of these methods in real investigations.

With the rise of immersive virtual reality (VR), this project evaluated the effectiveness of different interviewing strategies recommended as best practice in a more realistic setting using a 360-degree mock-crime presented on a VR headset. Further, we tested for the first time whether virtual interview rooms that the police could access using existing technology and incorporate contextual information from the crime scene can be used to enhance eyewitness testimony further.

Enhancing Support for Vulnerable Individuals in Investigative Interviews: The Impact of Alcohol and Video-Recorded Testimonies on Justice Outcomes

Dr Julie Gawrylowicz

This presentation addresses key issues related to supporting vulnerable individuals in the criminal justice system, with a focus on investigative interviews. It will highlight research on the effects of alcohol on memory recall, examining the implications for interviewing intoxicated witnesses and victims. Additionally, the presentation will introduce a new line of research involving Video-Recorded Interviews (VRIs) with victims, exploring how the quality of these recordings influences jurors' perceptions of credibility. As technological

Exploring the Practice of Interviewing Witnesses in Cases of Domestic Abuse

Dr Eva Rubinova

Tackling domestic abuse, gender-based violence, and violence against women and girls is one of the main priorities for the Scottish Government (2018) and the Scottish Police Authority (2024). Within this multi-faceted issue, the present project takes the perspective of investigative interviewing to better understand how evidence in these cases is collected.

Domestic abuse is frequently reported only after multiple occurrences of abuse, sometimes after long delays. Research has shown that individuals (children and adults) remember recurring/repeated events differently than single/unique experiences. For example, when reporting on instances of repeated events, individuals may focus on reporting "what usually" happens without providing details of instances, and if they do report on instances, they frequently misattribute what happened when.

Emerging research indicates that some interviewing strategies may help individuals provide more detailed and accurate reports about repeated events, though this research typically lacks connection to real-world practices. The present project aims to collect information about practices currently used by Police Scotland officers when collecting statements from witnesses of domestic abuse. Knowledge of these practices will inform our future research focused on developing interviewing interventions that may facilitate reporting in cases of domestic abuse

13:45 - 14:00 Afternoon Refreshments

14:00 - 14:30 Breakout Session 2

14:30 - 15:40 Academic Challenge Session/Impact Forum

15:40 - 16:00 Closing Remarks

16:00 - 17:00 Post-Event Networking & Refreshments

Convenors



Dr Eva Rubinova - Lecturer in Psychology, University of Aberdeen

I received my PhD at the University of Portsmouth, UK. Following my PhD, I worked as a Postdoctoral Fellow at Thompson Rivers University, Canada, with Prof Heather Price. I joined the University of Aberdeen in 2022, where I am now a Lecturer. I am also a Board Member and Chair of the Committee on Diversity and Inclusion of the Society for Applied Research in Memory and Cognition (SARMAC). My primary research and teaching interests are in Experimental Psychology & Law/Forensic Psychology. With my research, I aim to address questions related to how people remember unique and repeated experiences and help define practices that can be used by investigators to effectively elicit information. My current projects involve the use of immersive virtual reality to study eyewitness memory for interpersonal conflict in the context of domestic abuse.



Dr Penny Woolnough – Reader in Forensic and Investigative Psychology Abertay University / SIPR Associate Director - Evidence and Investigation Network

I am a Reader in Forensic and Investigative Psychology and Associate Director of the Scottish Institute for Policing Research with specific responsibility for the Evidence and Investigation Network.

With a former police officer colleague I pioneered the development of behavioural profiling of missing persons and my research findings are used by all UK police forces, Search and Rescue Teams, HM Coastguard and allied international agencies.

As an HCPC Registered Forensic Psychologist I have provided expert advice/operational support to over 100 high profile missing person cases around the world. I train Senior Investigating Officers and have worked with the Scottish Government to develop the first National Framework in Scotland for Missing Persons.



Dr Julie Gawrylowicz – Reader in Applied Cognitive Psychology, Abertay University

Dr. Julie Gawrylowicz is a Reader in Applied Cognitive Psychology at Abertay University, specializing in memory within applied contexts, particularly forensic settings. Her research focuses on the reliability of eyewitness testimony and the efficacy of police investigative interviews. She has explored factors influencing memory recall, including the impact of alcohol consumption and strategies to enhance interviewing techniques for vulnerable populations, such as young people, individuals with intellectual disabilities and older adults. Dr. Gawrylowicz earned her PhD from Abertay University in 2010, with a dissertation examining facial composite construction by individuals with intellectual disabilities. Following her doctoral studies, she held academic positions at London South Bank University and Glasgow Caledonian University before returning to Abertay in 2018. In her current role, she teaches courses in Introductory Psychology, Evidence-Based Thinking, and Forensic Psychology, and is programme leader for the two Forensic Psychology programmes: BSc Psychology with Forensic Investigative Psychology and BSc Psychology with Forensic Scene Investigation. In addition to her academic work, she provides consultancy for the Joint Investigative Interviewing Team and the Police Scotland Interview Advisor Course, applying her expertise to improve investigative practices. Dr. Gawrylowicz also supervises undergraduate and PhD students, contributing significantly to the academic community through both teaching and research.

Speakers

Dr Ailsa Millen – University of Stirling



Dr Ailsa E. Millen is a Chartered Cognitive Psychologist and Assistant Professor of Memory and Cognition at the University of Stirling. She specialises in face recognition, deception, and technological credibility assessment, with a focus on individual differences and neurodivergence. She leads research on concealed information tests for face identification, public perceptions of technology in the criminal justice system, and the development of intelligent avatars for policing and defence. Her research is funded by the ESRC, Brain, BPS, Crucible, and DSTL. Dr Millen leads the Stirling Cognition Group and Co-Chairs the Neurodiversity Hub for Research in Policing, Security, and Defence (with DSTL). She engages and collaborates with key stakeholders to translate psychological research into evidence-based applications for policing, security, and defence (Police Scotland, Home Office, the NCA, DSTL, UK Biometric Working Group.). She completed her PhD at the International Research Centre for Forensic Psychology in Portsmouth in 2015 and has been a researcher and lecturer at the University of Stirling since 2016.

Dr Clare Sutherland- University of Aberdeen



I completed my PhD on face perception and trust at the University of York in 2015 then continued my research at the University of Western Australia (UWA), first as a research associate then research fellow (2015-2019). I am an honorary Research Fellow at UWA but am now based at the University of Aberdeen (2019-) where I lecture and research in social psychology and face recognition. My work has looked at how we make subjective social judgements from faces, the development of face recognition, individual differences in face recognition and the rise of AI models of recognition. During my PhD I also completed an internship at the Home Office on cybercrime in the Crime, Policing and Analysis Unit, where I worked on characterising online and offline offenders, amongst other topics. I am keen to support students to work on public-facing research: my own students have completed internships in the Australian and Scottish governments and the Cabinet Office. I am interested in face recognition, face AI and face expertise. My research has also looked at demographic differentials in face recognition AI. I have published scientific reports, policy papers and advisory briefs on these topics together with lawyers, computer scientists and forensic experts.

Dr Rui Paulo – Birmingham City University



Rui Paulo is an Associate Professor in Forensic Psychology at Birmingham City University. His research is focused on cognition and memory (particularly eyewitness memory) and investigative interviewing of crime witnesses and victims. His work impacted international policy, practice, and training, namely with the methods he created to interview witnesses and victims being adopted by international police forces and included in the training curriculum of Law Enforcement Agencies. His research resulted in media coverage, and he is actively engaged with the research community namely as an editor, reviewer, and author of several articles in peer-reviewed journals, handbooks, and books. Further, he led undergraduate and postgraduate degrees in Forensic Psychology in the UK and abroad and supervises postdoctoral researchers and postgraduate students. He coordinated several research groups, themes, and clusters in the field of Forensic Psychology and is the Principal Investigator in externally funded interdisciplinary research projects.

Dr Travis Seale-Carlisle – University of Aberdeen



I earned my BA from the University of California, San Diego in 2012 and my PhD from Royal Holloway, University of London in 2017. Since then, I have completed postdoctoral fellowships at Royal Holloway (2017-2018), the University of Birmingham (2018-2019), and Duke University (2019-2021). I then joined the School of Psychology at the University of Aberdeen as a Lecturer (Assistant Professor) in 2021. My research throughout this time has covered several areas of cognition such as decision-making, memory, and language. Broadly speaking, my research seeks to advance our theoretical understanding of human memory so that memory can be more reliable in applied and forensic settings. One line of my research aims to improve eyewitness identification procedures. I make use of signal-detection theory to guide my thinking and often incorporate machine-learning techniques to test competing research hypotheses.

Speakers



Dr Anna Bobak - University of Stirling

I completed my PhD in 2016 at Bournemouth University. My thesis was the first comprehensive examination of people with superior face recognition skills, so-called super-recognisers. After my PhD, I joined Prof. Peter Hancock's group at University of Stirling where I studied human-computer interaction. In 2019, I became a Leverhulme Fellow and worked with people affected with face blindness (prosopagnosia). Currently, I am one of the investigators in a ESRC-funded multi-national team studying the way we can increase eye-witness identification using 3D interactive lineups in Virtual Reality. Overall, I am interested in individual differences in unfamiliar face recognition. What are the true boundaries of face recognition and what processes we recruit to tell whether two faces are the same person or two different people? Recently, I have also been working on how we recognise faces after considerable time has passed (aging) and how automated face recognition interacts with human decision-making.

Poster Presentations



Bernadett Szilagyi – Abertay University

I am a PhD researcher at Abertay University, and my work focuses on the mental health needs of older adults within the Scottish Prison Service. My research explores how aging and incarceration intersect, with a particular focus on understanding the unique challenges faced by this population and improving access to mental health support. I have a strong interest in the experiences of vulnerable individuals in the criminal justice system and am passionate about using research to influence policy and practice.

This research explores the mental health needs of older prisoners in the Scottish Prison Service (SPS) and assesses how well prison staff are equipped to address them. Older prisoners, classified as 50 and over in Scotland, experience higher rates of mental health issues such as depression and anxiety compared to the general population. Despite these challenges, the prison environment remains largely designed for younger individuals, often neglecting the specific needs of older adults.

Through interviews and focus groups with older prisoners, prison officers, other SPS staff, and third-sector stakeholders, this study aims to gain a deeper understanding of the everyday experiences, mental health literacy, and quality of life of older prisoners. Findings will inform recommendations to improve policy and practice, ensuring better mental health care and support. This research addresses a significant gap in current knowledge and seeks to promote fair treatment and improved wellbeing for older prisoners.

Amir Shapira - University of Stirling



Amir Shapira is a research assistant working as part of the 3D Interactive Lineups (3DIL) project at the University of Stirling in collaboration with Max Planck Institute for Human Cognitive and Brain Sciences, the University of Birmingham, and the University of Victoria. At the University of Stirling, he is currently undertaking an MSc in Psychological Research Methods and is a member of the Face Research Laboratory. Through this, in collaboration with members of this lab, he is working to further expand research undertaken as part of his BSc dissertation investigating Concealed Information Tests and the detection of concealed face recognition.

In a criminal investigation, individuals may attempt to hide their recognition of an item. The Concealed Information Test (CIT) aims to detect this but is only known to be effective for detecting previously familiar knowledge; detection of concealed newly learnt knowledge is uncertain. This study aims to explore use of eye fixations for detecting concealed recognition of items encoded during a mock-crime; the role of familiarity and distinctiveness in encoding items; individual differences in visual processing ability moderating concealed recognition. Findings revealed that only through dwell time in simultaneous displays was concealed recognition of crime-relevant items (probes) reliable. No significant differences between responses to crime-relevant and irrelevant items was found when looking at eye fixations during sequential displays. Familiarity of items did not correlate with CIT effects, although distinctiveness of certain items did. Finally scores on measures of individual differences did not correlate with CIT effects for any items.

Poster Presentations

Brownbill, E. Liang, P. Megson, M. Shapira, A., & White, H. Millen, A. E. (PI).

Neurodiverse Markers of Concealed Face Recognition in Neurotypical and Autistic Individuals.

Suspects sometimes lie about recognising criminal associates, making the detection of concealed face recognition an important area for policing research. Previous studies have shown that concealed recognition can be detected using eye-tracking Concealed Information Tests (CITs), but evidence in neurodiverse populations is limited. This study aimed to assess eye-tracking markers of concealed face recognition in neurotypical and autistic-identifying individuals (N = 44), comparing the efficacy of sequential and simultaneous CIT formats. Each participant completed both a sequential CIT, in which faces were presented one at a time, and a simultaneous CIT, where six-face arrays were shown. In both formats, participants were instructed to deny recognition of one familiar face, identify another familiar face, and correctly reject unfamiliar faces. Eye movements (e.g., number of fixations, dwell time) were recorded while participants made yes/no recognition responses (simultaneous verbal and button response). Concealed recognition was detected by differences in fixations and dwell times on familiar faces. The most reliable marker of concealed recognition was dwell time on familiar faces in the simultaneous CIT, with consistent patterns across both neurotypical and autistic-identifying participants. These findings provide evidence that the simultaneous eye-tracking CIT outperforms the sequential format and offer the first evidence of reliable markers of concealed recognition in autistic individuals, advancing understanding of credibility assessment in neurodiverse populations.



Zsafia Kovacs-Bodo - University of Stirling

Recognition of aged faces

Faces change significantly across the lifespan, posing a challenge for face recognition in both forensic and everyday contexts. This study explores people's ability to recognize faces with 10- or 40-years of age difference and examines if there is an advantage for encoding younger or older faces. More than 600 images of Hungarian actors were collected to create a classic old/new task. Participants encoded faces either at 20 or at 60 years old and attempted to recall them after various years of change. The two main findings of this project were the drop in accuracy with larger age gaps and the higher accuracy rates in trials where faces were studied at 60 years old. However, it is possible that the variation in image quality led to these results. To address this limitation, ongoing work aims to control for the variance in image quality and replicate the findings.

Bio

Zsafia Kovacs-Bodo is a MSc Psychological Research Methods student at the University of Stirling, with a focus on face recognition and the effects of facial aging. Her interest in this field began with her undergraduate dissertation project, which has been expanded through the Experimental Psychology Society New Graduate Bursary in Summer 2024 and is currently continued as part of her MSc dissertation. Zsafia is still early in her career, but already had great opportunities, such as participating in the EPS face identification workshop and co-authoring a review with her peers for The Cognitive Psychology Bulletin.

Poster Presentations



Abbie Macaskill

Improving the Diagnostic Value of Person Descriptions

Eyewitness descriptions are crucial for criminal investigations, but police have long questioned their quality. Researchers have addressed these concerns by developing interview techniques that boost accuracy, but boosting diagnostic value is crucial. For example, describing the perpetrator as a “young White male with short brown hair” may be an accurate description but not particularly useful for police, as many people match this description. Police need diagnostic descriptions which include unique, individuating features that help differentiate the perpetrator from similar-looking innocent people. This research compares two interview methods to determine which elicits more diagnostic descriptions. Findings suggest that the Person Description Interview, a widely recommended technique, does not yield more diagnostic descriptions than a basic, standard interview. These results shed light on the mechanisms driving diagnostic value and improve police procedure for collecting eyewitness accounts.

I am an SGSSS-funded Psychology PhD student at the University of Aberdeen. I am interested in forensics, memory, and the integration of AI applications to solve problems afflicting the criminal-legal system. My PhD project focuses on improving the diagnostic value of person descriptions while incorporating machine-learning techniques to enhance policies related to eyewitness interviews. I am passionate about improving the criminal-legal system, particularly within eyewitness evidence-gathering procedures.



Sian Tyreman, Amir Shapira, Anna Bobak

Improving Eyewitness Accuracy using 3D interactive lineups (3DIL)

Accurate eyewitness identification is an important part of the investigative process. Despite this, eyewitness errors are common and can result in wrongful convictions. Eyewitness procedures typically involve the presentation of 2D video (UK) or photographic (US) lineups to witnesses. However, recent advancements in 3D imaging technology and Virtual Reality (VR) present a new possibility to increase eyewitness identification accuracy. The 3D Interactive Lineups (3DIL) project seeks to investigate the potential of VR and the use of 3D images for increasing eyewitness accuracy, particularly given previous findings of improved accuracy when using interactive 2D lineups over static ones. Additionally, the role of individual differences in face processing and eyewitness performance remain largely unexplored, hence this project seeks to examine how individual face recognition ability may underpin accurate eyewitness identification.

Sian Tyreman is a MSc Psychological Research Methods student at the University of Stirling. She is interested in the use of technology to answer questions within cognitive psychology and the real-world applications of this knowledge. As a part of her MSc placement, she has been involved in the 3D Interactive Lineups (3DIL) project at the University of Stirling in collaboration with Max Planck Institute for Human Cognitive and Brain Sciences, the University of Birmingham, and the University of Victoria.

Special Thanks

Dear Delegates,

Thank you very much to everyone who has attended and participated in this event. Your insights, discussions, and engagement made it a truly valuable experience. We appreciate your contributions and look forward to continuing these important conversations in the future!

Warm regards,

Your co-convenors

Eva, Penny, and Julie



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