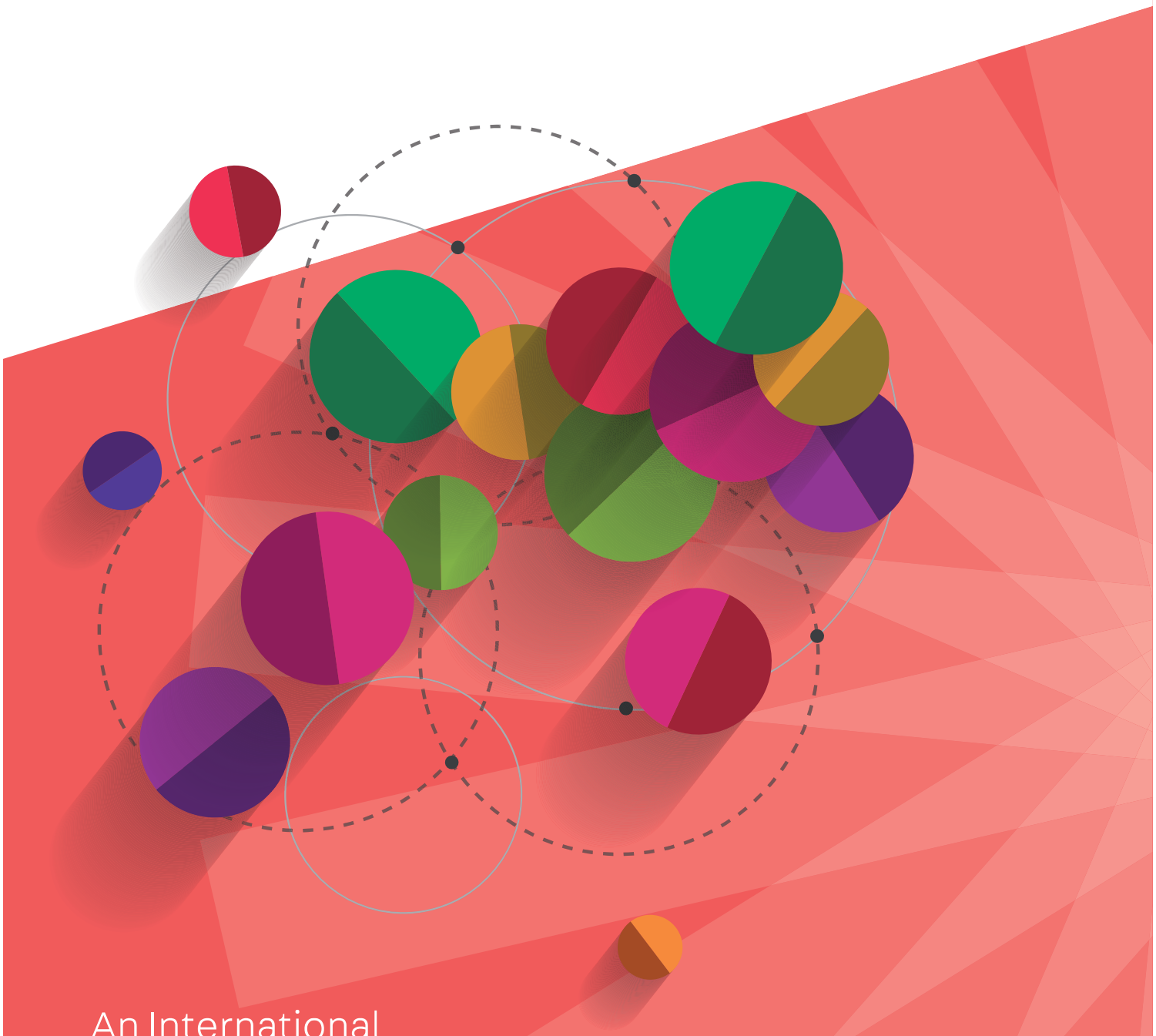
Dublin Business School

DBS Applied Research and Theory Journal



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Applied Research and Theory Journal

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Journal Team

Editor-in-Chief

Dr Vincent Hunt BA(Hons), MBA, DBA.
Vincent has been a Senior Lecturer in Business since September 2024, having joined DBS as a lecturer in January 2023. Since February 2024 he has also served as Editor-in-chief of the DBS Applied Research and Theory Journal. With extensive industry experience across various organisations, Vincent brings valuable insights to his teaching and research. He has spent the last decade in academia, previously working at TU Dublin (Graduate Business School), SETU, and National College of Ireland. He holds an MBA from DCU and a DBA in Business Economics from UCC.

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Trevor Haugh MLIS BA, Dublin Business School
Trevor has worked in the DBS Library for fifteen years. He has worked in various roles both inside and outside the library during his time in DBS. In the Library he has worked as Head of Reader Services, Information Skills Manager and Deputy Librarian. Outside the Library Trevor has taken up other roles including part time Lecturer on the Msc in Information and Library Management and Dissertation Supervisor. Alongside his current role as Head of DBS Library, Trevor has been Joint Managing Editor of DBS Applied Research and Theory journal for the last 2 years.

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David Rinehart MA MSc, Dublin Business School
David studied a M.A. in Latin American Studies at the University of Florida where he started his first library job in the Smather's Latin American and Caribbean Collection. Since then, he has held several posts in various libraries in higher education including Dundalk Institute of Technology, Maynooth University, and DBS. He received a MSc in Library and Information Studies from Robert Gordon University. David is also cofounder of the Queer Library Alliance established to help provide guidance and support for all library professionals and library users threatened by the far right attacks on the LGBTQ+ community in Ireland. David is the founding chair of the LAI Rainbow Library Network and chair of the LAI/CILIP Join Conference 2026. In addition, David is a member of the National Academic Integrity Network (NAIN). David is a Joint Managing Editor of the DBS Applied Research and Theory journal.

Editoral Assistant

Francisca Silva MLIS BA, Dublin Business School

Francisca holds a first-class honours MSc in Information and Library Management from Dublin Business School and a Master's in Political Science and International Relations from Portugal. She was awarded third place in the LIR Show and Tell 2023 competition. Francisca joined DBS as the eResources Assistant Librarian at DBS, and is now the Research Librarian, offering research support to students and faculty, serving as an Editorial Assistant for the Applied Research and Theory Journal, and acting as Secretary of the Applied Research and Practice Committee. Francisca is also part of the Academic and Special Libraries Committee, NAIN, and the LAI/CILIP Conference 2026 Committee.

Senior Editor

Evan Flanagan MLIS BA, Dublin Business School

Evan obtained a degree in History from University College Dublin and worked in bookselling before entering the field of librarianship with Wexford Public Library Services in 2023. Since then, he acquired a Masters' in Library & Information Sciences from UCD and joined the DBS Library Team in 2025 as a Library Assistant. Evan provides focused one-to-one learning support to students in the areas of academic writing, assignment planning, referencing and more, as well as assisting DBS students, staff and faculty with reference and research queries. Evan is a Senior Editor for the DBS Applied Research and Theory Journal.

Managing Editor

Louise Cooke-Escapil MLIS BA (Hons), Fingal Libraries

Louise is a librarian in Fingal County Council. She was previously the Research Librarian at Dublin Business School and joint Senior Editor for the Applied Research and Theory Journal. Louise is an active member of the library community, being a member of the Library Association of Ireland's Open Scholarship and Library Publishing Group and having previously served as the Communications Officer for the Library Association of Ireland's Career Development Group. In 2023, she received the CILIP 125 award, which recognises librarians who have contributed to the sector.

Senior Editor

Niamh McHenry MLIS BA, Marino Institute of Education

Niamh McHenry started her career in libraries at Dublin Business School where she managed the library's social media account and delivered outreach initiatives. Later, she was promoted to Digital Literacy Librarian. Her time at Dublin Business School sparked her interest in all things library instruction, information literacy, and library outreach. During this time, Niamh was also a Senior Editor for the DBS Applied Research and Theory Journal. Niamh is now the Teaching, Outreach and Engagement Librarian at Marino Institute of Education.

Volume 3 is dedicated to Aisling Coyne

Aisling was a beloved member of the Library Association of Ireland, former DBS Student and member of the Editorial Board of the DBS Applied Research and Theory Journal.

For those wishing to honour her life, memorial donations in Aisling's name may be made to the Palestine Childrens Relief Fund (PCRF) on the following link **https://www.pcrf.net/donate**

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Table of Contents

Applied Research and Theory Journal
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DBS Applied Research and Theory Journal

March 2026

Editorial | journal.dbs.ie

Editor-in-Chief's Introduction to Volume 3

Dr Vincent Hunt
Editor-in-Chief
DBS Applied Research and Theory Journal

It is a pleasure to introduce Volume 3 of the *DBS Applied Research and Theory Journal*. This volume reinforces the journal's core mission: to publish high-quality applied research that demonstrates clear practical relevance, supported by a robust double-blind peer review process. By welcoming contributions from a wide range of disciplinary perspectives, the journal continues to position itself at the nexus between theoretical enquiry and professional practice.

The scope of the journal is deliberately broad, encouraging collaboration, innovation and intellectual exchange across disciplines. Emphasis is placed on multidisciplinary research emerging from professional backgrounds, reflecting the increasingly complex nature of contemporary research challenges. As such, this volume features contributions from students, academics, practitioners and industry experts, representing both national and international contexts and offering diverse perspectives on applied research and theory.

The Theme of 'Curiosity in Practice'

The theme for this issue, *Curiosity in Practice*, has been adopted to provide coherence across submissions while acknowledging the evolving landscape in which applied research operates. The theme reflects shifts in professional practice, methodological development, technological transformation and changing societal expectations of research impact. Collectively, the articles in this volume demonstrate how applied research can respond to, and meaningfully shape, change across multiple contexts.

The journal is fortunate to be compiled by a dedicated team of volunteers. who in addition to their primary roles at DBS, provide expertise, guidance, and professionalism. Each member of the editorial team is driven by the strategic vision and dedication to the development of the journal, led by Trevor Haugh (Head of Library and Academic Hub, Joint Managing Editor), David Rinehart (Information Skills and Research Manager, Publishing Editor), Francisca Silva (Research Librarian and Senior Editor), and Evan Flanagan (Library Assistant and Senior Editor). The journal team also extends its gratitude to Amy FitzPatrick, Louise

Cooke-Escapil and Niamh McHenry, who transitioned from the editorial team this year. Their exceptional work was instrumental in strengthening the journal's position. Furthermore, appreciation is extended to the wider DBS Library team, who frequently serve as research assistants to the journal. We also express profound gratitude to the peer reviewers, editorial board, and advisory board for their invaluable commitment and rigorous work, which is essential to the quality and integrity of the journal.

In 2025, the editorial team introduced a comprehensive strategy for the sustained growth of the DBS Applied Research and Theory Journal. This initiative builds upon its predecessor, the DBS Applied Research Journal Growth Strategy. It employs a phased methodology, commencing with the establishment of a robust editorial and operational infrastructure in the first year of the strategy, followed by procedural refinement and expansion. The strategy's second year transitions to a focus on long-term sustainability and growth, emphasizing advanced operational processes, an increase in readership, and compliance with stringent quality publishing standards. Key milestones have been achieved in the first year, including updates to the Author, Peer Review, and Format & Style Guidelines, alongside a revised social media presence. The DBS Applied Research and Theory Journal has also established a presence on LinkedIn; stakeholders are encouraged to follow the page for the latest journal developments.

The Ethos of the Journal

The *DBS Applied Research and Theory Journal* is published as a diamond open access journal, ensuring a sustainable publishing model that removes financial barriers for both authors and readers. This commitment to open access is firmly embedded within the ethos of the DBS Library and underpins the journal’s aim to make research freely and widely available. Published by DBS Library Press, the journal is indexed in EBSCO and Proquest Ulrichsweb, enhancing its discoverability and accessibility to a global academic and practitioner audience.

The journal is closely aligned with DBS’s annual Practical and Applied Research Conference (PARC), held each April, which provides a valuable forum for interdisciplinary research dissemination and development. PARC supports an open research ecosystem, offering pathways from conference presentation to journal publication. The conference programme reflects a strong community of practice, encompassing parallel disciplinary sessions and the presentation of the student research awards.

Key Research Themes in This Volume

In keeping with our ethos and theme, ‘Curiosity in Practice’, the research articles published in this volume span multiple disciplines, ranging from O’Sullivan et al.’s report on the HECA Conference 2025 to Latoja’s ‘Lived Experiences of Struggling Students in E-Learning’. The theme linking these articles reflects the struggle of the individual in the face of an environment driven by the pace of technological change.

In another indicator of our changing world, Ameh and Victor consider the complexities of forecasting economic inflation. The theme of economics and

technology is also present in Bhatnagar: ‘Hybrid vs. Standalone Robo-Advisors: Behavioural and Trust Dynamics in India’s Wealth Management Sector’.

The theme of learning is addressed in the research of Fair: **‘**Making Feature Films As Part Of Higher Education Curricula: A Comparative Analysis’. The learning challenges of the individual are also addressed in Kirby and Woodville, Lisboa and Hyland, and Loison and Balou. It is important to us as a journal with a strong learning focus that we give voice to research concerning the challenges of learning with a view to informing practice.

The ongoing support of DBS is a significant factor in the publication of the journal. Such support reinforces the DBS commitment to academic quality and individual contribution. Through the provision of an institutional platform for scholarly dissemination, DBS strengthens its research culture and enhances its academic profile within the Irish and international higher-education landscape. Furthermore, the journal signals DBS commitment to scholarly community building thereby supporting staff development, interdisciplinary dialogue, and international collaboration.

The Future

Later this year, the journal will transition to a bi-annual publication schedule. In addition, we will further diversify the contributor base across institutions and sectors. The editorial team is also expanding the range of submission formats to include author interviews, reflective accounts of research practice, and growing our social-media presence. This broader approach is intended to extend the journal’s value beyond conventional research outputs and to capture the full breadth of applied research activity.

Volume 3 represents a journal growing in confidence. The theme of ‘Curiosity in Practice’ epitomises the research published in this issue and the journal’s wider ambition to support inclusive, practice-informed and future-oriented academic discourse. We encourage readers to engage critically with the contributions in this volume and to actively consider how applied research actively shapes knowledge, informs policy, and develops practice.

DBS Applied Research and Theory Journal

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Hybrid vs. Standalone Robo-Advisors: Behavioural and Trust Dynamics in India's Wealth Management Sector

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Abstract

This study examines how emerging financial technologies are reshaping investor behaviour in India's wealth management sector, with a focus on robo-advisors. Drawing on behavioural finance theory, it compares hybrid models (human and algorithm) with fully automated platforms. Using a mixed-methods approach, original survey data were analysed alongside thematic analysis to evaluate investor trust, satisfaction, and adoption drivers.

Findings reveal a strong preference for hybrid advisory models, driven by the need for personalisation, emotional reassurance, and accountability. While digital literacy enables adoption, algorithmic opacity and concerns over data misuse remain key barriers. Cross-variable analysis indicates that higher digital proficiency correlates with greater openness toward standalone platforms, while lower literacy and financial inexperience favour hybrid systems. Ethical and regulatory expectations particularly regarding transparency and accountability significantly influence adoption decisions.

The study highlights that automation alone cannot ensure investor confidence; trust is coproduced by both human interaction and system transparency. It concludes that the future of robo-advisory in India lies not in replacing human advisors but in redefining their role within hybrid ecosystems that balance efficiency with empathy.

Keywords: Robo-advisors; Investment Advisors—Technological Innovations; Human-machine Systems; Fintech

Introduction

Financial technology has transformed how individuals invest, save, and manage wealth. Robo-advisors' digital platforms that use algorithms to offer automated investment advice and portfolio management represent one of the most visible shifts in this transformation. They promise accessibility, efficiency, and lower costs compared with traditional human advisors. Globally, such systems have matured from basic allocation calculators into intelligent advisory engines that combine data analytics, automation, and, increasingly, human oversight (Fisch et al., 2019; Gomber et al., 2017; Jung et al., 2018).

However, adoption has not been uniform across regions. In developed markets such as the United States and parts of Europe, high levels of digital literacy, self-directed investing culture, and well-defined regulatory frameworks have supported rapid growth of robo-advisory services (Phoon & Koh, 2018). Emerging economies, including India's, present a more complex landscape. The country's fintech ecosystem is expanding quickly under initiatives such as Digital India and India Stack, and smartphone penetration has widened access to financial tools Yet this digital progress coexists with deep-rooted behavioural patterns: a strong reliance on personal trust, relationship-based financial advice, and cautious attitudes toward technology-driven decision-making (Ashrafi, 2023). Concerns over data privacy, cyber risk, and lack of clear accountability remain deterrents (Zarifis & Cheng, 2022).

This tension makes the distinction between standalone and hybrid robo-advisors particularly relevant in the Indian context. Standalone models operate fully through algorithms; they are efficient and scalable but often viewed as impersonal or opaque (Castelo et al., 2020; D'Acunto et al., 2019). Hybrid models combine algorithmic recommendations with human interaction, offering emotional reassurance, personalisation, and accountability (Fisch et al., 2019; Reher & Sokolinski, 2024). For Indian investors who traditionally value interpersonal trust and contextual advice, these differences are not just technical, they reflect deep behavioural and cultural preferences (Ashrafi, 2023).

Behavioural finance provides a useful lens for understanding these choices. Theories such as algorithm aversion, ambiguity aversion, and loss aversion explain why many investors prefer some degree of human reassurance when outcomes feel uncertain (Castelo et al., 2020; Kahneman & Tversky, 1979). Trust becomes central not only in the technology itself but in the system that supports it (Belanche et al., 2019). Studies on robo-advisor users in India show that adopters are typically younger, professionally employed, and small to medium investors, reflecting the early profile of digital advisory users (Baulkaran & Jain, 2021). At the same time, trust in automated advice is shaped by perceptions of transparency, fairness, and clarity around algorithmic decisions, which remain essential determinants of investor confidence in fintech systems (Zarifis & Cheng, 2022).

Despite global research, empirical understanding of how Indians weigh efficiency vs. reassurance remains limited. Existing studies describe adoption barriers broadly without analysing how literacy, biases, and ethical concerns shape platform choice (Tan et al., 2023; Zarifis & Cheng, 2022). This study addresses that gap by investigating how trust, digital literacy, and investment experience influence the

preference for hybrid versus standalone robo-advisors in India's wealth management sector. The research asks three main questions:

1. How do trust and satisfaction differ between users of hybrid and standalone robo-advisors?
2. To what extent do digital literacy and investment experience predict platform preference?
3. What regulatory and ethical expectations most influence adoption and sustained use?

These questions are relevant for both practice and policy. For fintech firms, understanding behavioural drivers helps design advisory systems that combine automation with empathy. For regulators, insights on investor trust can guide frameworks around transparency, accountability, and grievance redress.

To answer these questions, the study uses a mixed-methods approach that combines quantitative data with qualitative thematic analysis. It examines statistical associations through chi-square testing and interprets open-ended responses to capture underlying trust dynamics. The study is guided by the following hypotheses:

- H1: Higher digital literacy is associated with greater openness to standalone robo-advisors.
- H2: Lower financial experience and lower digital literacy are associated with a stronger preference for hybrid robo-advisors.
- H3: Concerns about algorithmic opacity and data handling are negatively associated with willingness to adopt standalone platforms.

By integrating these dimensions, the research contributes to both theory and practice. It shows that investor trust in India is co-produced by technological transparency and human interaction highlighting why hybrid platforms currently hold greater appeal (Belanche et al., 2019; Zarifis & Cheng, 2022). More broadly, it argues that the future of robo-advisory in India lies in systems that balance automation with empathy, efficiency with accountability, and innovation with investor protection.

Having outlined the research problem and objectives, the next section reviews existing scholarship on robo-advisors and behavioural finance. It examines how global studies have conceptualised investor trust, the evolution of hybrid models, and the specific regulatory and cultural dynamics that frame India's wealth management landscape.

Literature Review

The adoption of robo-advisors has attracted growing attention among academics and within industry, particularly in developed markets where digital literacy and regulatory clarity support automation in investment decisions. However, research remains limited in emerging economies such as India, where behavioural, cultural, and regulatory conditions differ significantly. Understanding these contrasts requires looking beyond adoption rates to the deeper psychological, technological, and institutional factors that

shape investor trust. This literature review brings together evidence from five interconnected domains that collectively frame these issues:

1. The evolution of robo-advisors, tracing their technological and conceptual development.
2. Behavioural finance and investor trust, explaining how human biases influence adoption.
3. Global adoption and hybrid models, highlighting patterns across different markets.
4. The Indian context, focusing on cultural and structural particularities.
5. Regulation and ethics, examining oversight and accountability.

Together, these domains provide a conceptual foundation for analysing how trust, digital literacy, and investor experience shape preferences between hybrid and standalone robo-advisors in India's wealth management sector.

1. Evolution of Robo-Advisors

Robo-advisors have developed quickly from simple portfolio allocation tools into multifaceted advisory systems that combine algorithmic decision rules, automated rebalancing, and increasingly sophisticated data analytics. Early platforms functioned mainly as online calculators that automated basic diversification and passive allocation (Fein, 2015). As computing power and data availability increased, robo-advisors entered a second phase where automated rebalancing, exchange-traded fund (ETF) based allocation, and rule-based tax optimisation became standard features (Jung et al., 2018). The most recent generation integrates machine learning and client profiling to deliver more personalised recommendations and dynamic portfolio strategies (Gomber et al., 2017).

Academic and industry accounts now point to a fourth wave in which human oversight is combined with algorithmic capabilities – known as hybrid models. Proponents argue that these deliver a practical middle ground: they retain the scalability and low cost of algorithms while restoring elements of human judgement and reassurance that many investors value (Fisch et al., 2019; Reher & Sokolinski, 2024). Empirical work in developed markets finds that hybrid solutions often score higher on client satisfaction and retention, even if fully automated solutions sometimes offer slightly better cost savings (Reher & Sokolinski, 2024).

Importantly, the trajectory from Robo-Advisory (RA) 1.0 to RA 4.0 suggests that technological maturity alone does not guarantee user acceptance. As robo-advisors become more capable, user concerns shift from purely functional performance to questions of transparency, accountability, and explainability – issues that cannot be addressed by algorithmic improvements alone (Gomber et al., 2017). This evolutionary perspective helps explain why hybrid models have gained traction: they provide a mechanism for integrating technical efficiency with interpersonal trust.

The reviewed literature therefore establishes hybrid models as an emergent and increasingly significant category within robo-advisory services. However, most empirical assessments of this evolution have been conducted in developed markets, with limited attention to how these patterns manifest in culturally distinct, high-growth economies such as India.

2. Behavioural Finance and Investor Trust

Behavioural finance research challenges the assumption of purely rational decision-making by showing that emotions, heuristics, and cognitive biases strongly influence investor behaviour. Foundational work on prospect theory by Kahneman and Tversky (1979) established that investors systematically deviate from rational utility models because of loss aversion, framing, and anchoring effects. These principles have direct implications for technology-based advisory models, where uncertainty and algorithmic opacity often amplify perceived risk.

One of the most relevant behavioural biases in the context of robo-advisors is algorithm aversion the tendency of individuals to distrust automated decision-making after observing even minor errors (Castelo et al., 2020). Relatedly, ambiguity aversion causes investors to avoid options when they do not fully understand how outcomes are generated (D'Acunto et al., 2019). Studies in developed markets have shown that when investors cannot interpret or explain the logic of an algorithmic recommendation, their willingness to rely on it declines sharply (Dietvorst et al., 2015).

Trust therefore becomes the mediating variable between behavioural biases and technology adoption (Belanche et al., 2019). In the context of financial advice, trust operates on two dimensions: cognitive trust, based on competence and reliability; and affective trust, based on empathy and perceived alignment of interest (Lee & See, 2004). Hybrid robo-advisors appear to strengthen both by combining transparent, rules-based logic with human reassurance. Research by Fisch et al. (2019), and Reher and Sokolinski (2024) found that investors often accept algorithmic recommendations more readily when a human advisor validates or contextualises them, even when the algorithm's performance is objectively strong.

In emerging markets, these behavioural dynamics are amplified by cultural and contextual factors. Studies in Asia and the Middle East suggest that collectivist values, relationship orientation, and varying digital confidence levels increase the premium placed on human interaction in financial decisions (Ashrafi & Kabir, 2023; Phoon & Koh, 2018). In India, investors' trust in advisory systems is shaped not only by functional accuracy but by perceived fairness, data security, and moral accountability (Zarifis & Cheng, 2022). Consequently, algorithm aversion and ambiguity aversion may be more pronounced, particularly among less digitally literate investors.

Prior behavioural studies explain why investors often prefer hybrid robo-advisors that combine automation with human input. However, empirical evidence quantifying these effects in India remains limited, particularly regarding how digital literacy and investment experience influence these preferences. The present study addresses this gap by analysing the relationships between trust, behavioural biases, and platform choice (H1–H3), thereby linking behavioural finance theory with real-world adoption outcomes in the context of the developing market.

3. Global Adoption and Hybrid Models

Global adoption of robo-advisors has followed distinct regional trajectories, shaped by variations in financial literacy, regulation, and investor culture. In North America and Western Europe, where technology use and self-directed investing are more common, adoption has grown steadily since 2015, with major platforms such as Betterment and

Wealthfront capturing a significant market share (Jung et al., 2018; Phoon and Koh, 2018)). These markets are characterised by well-defined regulatory oversight and investor familiarity with digital financial tools, creating conditions that favour fully automated advisory models.

In contrast, adoption patterns in Asia-Pacific and the Middle East show a stronger preference for hybrid systems that blend automation with limited human guidance. Studies in Singapore and Malaysia indicate that investors appreciate digital convenience but still seek human reassurance for major financial decisions (Phoon & Koh, 2018; Ashrafi & Kabir, 2023). . Similar findings have been reported in China and the UAE, where cultural norms of relational trust and hierarchical communication encourage investors to value interpersonal advice alongside algorithmic efficiency (Ashrafi, 2023; Reher & Sokolinski, 2024). These findings collectively suggest that while automation improves access and scalability, trust and perceived control remain decisive in determining adoption rates.

Empirical comparisons further indicate that hybrid robo-advisors achieve higher satisfaction and retention levels in markets with lower digital literacy or greater uncertainty avoidance (Belanche et al., 2019; Fisch et al., 2019). Even in technologically advanced economies, investor surveys show that users are more comfortable when human advisors validate algorithmic outputs, reflecting an enduring need for relational assurance (Castelo et al., 2020). The global pattern, therefore, reveals a convergence toward hybrid models not as transitional solutions but as sustainable structures that balance efficiency with human confidence.

However, this convergence is under-represented in empirical research from developing economies, particularly India. Few studies have compared hybrid and standalone platforms in markets where financial inclusion is expanding rapidly but investor literacy and regulatory frameworks remain uneven. Understanding how global patterns translate into such environments is essential for explaining adoption dynamics and trust formation in India’s emerging wealth management sector.

4. The Indian Context

India’s wealth management landscape is a complex environment for the adoption of robo-advisors. Rapid digitisation, growing middle-class affluence, and policy initiatives such as Digital India and India Stack have accelerated the expansion of financial technology platforms (Sabir et al., 2023). The country’s large, young, and increasingly mobile-first population provides fertile ground for fintech adoption. Yet, structural and behavioural patterns are slowing the transition from traditional, relationship-driven advice to automated models.

One of the defining features of the Indian investment culture is the high value placed on personal trust and interpersonal relationships. Studies have shown that investors frequently rely on informal networks, family recommendations, or long-standing financial advisors when making decisions (Ashrafi, 2023). This reliance is reinforced by historical scepticism toward financial innovation and a preference for tangible, human accountability (Zarifis & Cheng, 2022). While the proliferation of online brokerage platforms and digital payment systems has improved access, the emotional comfort derived from personalised advice remains a central determinant of financial decision-making.

Evidence from the Indian market also highlights a pronounced trust gap between investors and fully automated systems. Zarifis & Cheng (2022) note that limited transparency in algorithmic decision-making, concerns over data protection, and inconsistent regulatory communication reduce investor confidence in purely digital platforms. Evidence from the Indian market also highlights a pronounced gap in trust between investors and fully automated systems. Fama and Chakraborty (2024) note that limited transparency in algorithmic decision-making, concerns over data protection, and inconsistent regulatory communication reduce investor confidence in purely digital platforms. Similar concerns have been echoed by Baulkaran,. (2021), who found that perceptions of fairness and moral accountability heavily influence acceptance of automated financial advice. As a result, even digitally literate investors often choose hybrid platforms that retain a visible human element for reassurance and accountability.

At the same time, India's regulation and infrastructure differs from that of developed economies. The Securities and Exchange Board of India (SEBI) has introduced guidelines for digital advisory services, but clarity around algorithmic auditing, fiduciary responsibility, and client grievance mechanisms remains limited. This ambiguity places greater emphasis on perceived trustworthiness rather than institutional safeguards, further explaining the preference for hybrid models.

Recent studies have begun to explore these patterns. Sabir et al. (2023) found that hybrid robo-advisors in India attract higher satisfaction levels than standalone platforms, largely because human engagement mitigates algorithmic opacity. However, research that integrates behavioural, regulatory, and technological dimensions remains scarce.

In summary, India represents an emerging-market environment where digital readiness coexists with behavioural conservatism. Trust, digital literacy iteracy, and perceived accountability play a greater role in adoption decisions than cost or convenience alone. These dynamics underline the importance of examining how investor characteristics and behavioural biases interact to shape preference between hybrid and standalone robo-advisors, a gap this study directly addresses through its analysis.

5. Regulation and Ethics

The regulatory environment plays a central role in determining how robo-advisors evolve, operate, and are trusted by investors. In developed markets such as the United States and the European Union, clear regulatory frameworks have enabled faster adoption by establishing minimum standards for disclosure, fiduciary responsibility, and data protection (Fisch et al., 2019). The U.S. Securities and Exchange Commission requires robo-advisors to register as investment advisors, mandating transparency in algorithms and suitability of advice (Jung et al., 2018). Similarly, the European Union's Markets in Financial Instruments Directive II enforces robust disclosure and investor protection requirements, fostering a higher degree of institutional trust in automated systems (Hou et al., 2023).

But in emerging markets, regulatory oversight remains fragmented. Many jurisdictions are still developing frameworks that define accountability for algorithmic decisions, manage cross-border data flows, and ensure auditability of digital advice. Researchers have noted that the absence of consistent oversight can amplify investor concerns

about bias, privacy, and algorithmic manipulation (Ashrafi, 2023). Ethical questions such as who bears responsibility for losses due to algorithmic errors and how fairness can be assured in opaque systems remain largely unresolved (Zarifis & Cheng, 2022).

In India, SEBI has taken incremental steps toward formalising robo-advisory regulation. Its 2016 guidelines for advisors introduced provisions requiring registration, suitability assessments, and conflict-of-interest management. However, these rules were designed primarily for traditional advisors and do not explicitly address algorithmic transparency, data handling, or audit mechanisms. As a result, the responsibility for ethical conduct still rests heavily on the service providers themselves (Zarifis & Cheng, 2022). This regulatory ambiguity leaves investors dependent on perceived trustworthiness rather than codified standards, reinforcing the appeal of hybrid models where human oversight offers reassurance of accountability.

Ethical considerations further complicate the picture. Beyond compliance, issues of algorithmic fairness, data privacy, and the potential for reinforcing socio-economic biases have drawn scholarly attention (Castelo et al., 2020). Belanche et al. (2019) argue that transparency and explainability are moral imperatives in financial AI, not merely operational requirements. In markets where data literacy is uneven, lack of algorithmic clarity can create informational asymmetry, undermining trust even when outcomes are objectively sound.

The regulatory and ethical landscape surrounding robo-advisors is still evolving. While developed markets are moving toward mature, transparent oversight systems, emerging economies such as India continue to rely on a mix of self-regulation and fragmented supervision. For Indian investors, this context magnifies concerns around fairness, responsibility, and data protection. Consequently, ethical trust – the belief that human and algorithmic agents act in good faith – becomes central to adoption decisions. These regulatory and ethical complexities form the backdrop against which this study examines investor trust and preference for hybrid versus standalone robo-advisory models.

In summary, the regulatory and ethical landscape surrounding robo-advisors is still evolving. While developed markets are moving toward mature, transparent oversight systems, emerging economies such as India continue to rely on a mix of self-regulation and fragmented supervision. For Indian investors, this context magnifies concerns around fairness, responsibility, and data protection. Consequently, ethical trust the belief that both human and algorithmic agents act in good faith becomes central to adoption decisions. These regulatory and ethical complexities form the backdrop against which this study examines investor trust and preference for hybrid versus standalone robo-advisory models. .

Methodology

3.1 Research Design

This study adopted a mixed-methods design that integrates quantitative and qualitative approaches to understand investor trust and platform preference in India's robo-advisory market. Quantitative analysis identifies measurable relationships between investor attributes and platform choice, while qualitative analysis explores the

reasoning and perceptions underlying those decisions. This combination aligns with calls in fintech research to blend behavioural insights with empirical data when investigating technology adoption and trust formation (Belanche et al., 2019; Zarifis & Cheng, 2022)).

The design seeks to test hypothesised relationships between digital literacy, investment experience, and trust while also uncovering contextual nuances that quantitative data alone may overlook. This approach is particularly suitable for emerging-market research, where behavioural and regulatory conditions differ from developed economies. A mixed-methods approach was chosen because fintech adoption involves both quantifiable behavioural patterns and subjective perceptions of trust. Similar studies have shown that combining quantitative and qualitative evidence offers a more comprehensive understanding of investor decisions in technology-mediated finance (Belanche et al., 2019; Zarifis & Cheng, 2022 Fisch et al., 2019).

3.2 Population and Sampling

The study focused on individual investors in India who have awareness of, or prior engagement with, digital investment platforms. A non-probability purposive sampling method was employed to reach participants who could provide informed perspectives on robo-advisors. Data were collected using an online survey distributed through Google Forms between January and March, 2025.

A total of 49 valid responses were retained after screening for completeness and relevance. The sample included a variety of age, gender, and income groups with respondents concentrated in major urban centres such as Mumbai, Delhi, Bengaluru, and Pune. Although smaller than samples in other fintech studies, this size remains acceptable for exploratory mixed-methods research focused on behavioural trends (Sironi, 2016; Venkatesh & Bala, 2008). Purposive sampling is appropriate because the target group – digitally active investors – represents a relatively small and informed subset of India's broader investment population. Similar non-probability sampling has been applied in behavioural fintech studies where expertise has primacy over access to specific user groups (Venkatesh & Bala, 2008).

Given its modest scale, the sample offers indicative insights into digital investor behaviour rather than statistically generalisable conclusions. The findings should therefore be interpreted as exploratory evidence guiding future, larger-scale research.

3.3 Data Collection Instrument

The primary data collection tool was a structured questionnaire designed to capture both quantitative metrics and qualitative insights. The survey consisted of three sections:

1. Demographics and investor profile (age, gender, income, investment experience, digital literacy).
2. Platform preference and satisfaction, measured through closed-ended questions comparing hybrid and standalone robo-advisors.
3. Behavioural and ethical perceptions, using five-point, Likert-scale items assessing trust, data privacy, transparency, and perceived fairness (adapted from Belanche et al., 2019; Zarifis & Cheng, 2022).

Open-ended questions invited respondents to elaborate on the reasons behind their preferences and concerns, forming the basis for thematic analysis. The survey

instrument was pilot-tested with ten participants to ensure clarity and reliability. Minor adjustments were made to simplify wording and sequencing before full deployment.

The use of Likert-scale items to measure perceptions of trust, satisfaction, and ethical concern follows established fintech trust scales validated by Belanche et al. (2019) and Zarifis & Cheng (2022) . Open-ended questions were included to complement statistical analysis with respondent narratives, ensuring depth and contextual richness (Braun & Clarke, 2008). Participation was voluntary, and respondents were informed about the study's academic purpose and data confidentiality measures.

3.4 Variables and Operational Definitions

The study examined three core dimensions investor characteristics, behavioural trust factors, and platform preference.
These dimensions are operationalised below through the classification of dependent, independent, and mediating variables. .

1. Dependent variable: Platform preference (coded as 1 for hybrid and 2 for standalone robo-advisors).
2. Independent variables: Digital literacy (self-rated on a five-point scale), investment experience (measured in years), and age group.
3. Mediating variables: Trust and satisfaction (composite Likert-scale scores).

Trust was measured via technical trust (confidence in algorithmic reliability and data security) and relational trust (confidence in empathy, accountability, and personalised support), following Belanche et al. (2019). Digital literacy referred to an investor's perceived comfort and competence in using digital platforms and interpreting digital financial information, rather than formal technical expertise (Belanche et al., 2019; Zarifis & Cheng, 2022).

3.5 Data Analysis Techniques

Quantitative data were analysed using descriptive statistics and chi-square tests of independence to explore associations between investor attributes and platform preference. The chi-square test was chosen because it suits categorical data and does not assume a normal distribution (Sironi, 2016). The strength of relationships was measured using Cramer's V to interpret the magnitude of associations.

Qualitative responses were examined using thematic analysis, following Braun and Clarke's (2008) six-phase framework. Responses were coded, themes were identified (e.g., trust, transparency, and algorithmic understanding), and interpretations were verified through iterative review. Integrating both data types provided a more holistic understanding of investor trust and adoption behaviour, consistent with recommendations in behavioural finance research (Belanche et al., 2019).

3.6 Reliability and Validity

Reliability and validity procedures were applied to enhance methodological rigour. Cronbach's alpha exceeded 0.75 for trust and satisfaction scales, indicating acceptable internal consistency. Content validity was supported through pilot testing and the use of validated trust scales from Belanche et al. (2019) and Zarifis & Cheng (2022). Triangulation of structured items and open-ended responses improved construct validity.

3.7 Ethical Considerations

All participants provided informed consent before completing the survey. No personally identifiable information was collected, and respondents were free to withdraw at any stage. Data were stored securely and used exclusively for academic purposes. Ethical approval for this study was obtained from Dublin Business School's postgraduate research ethics committee. The research design conforms to the ethical principles of transparency, confidentiality, and voluntary participation. Ethical protocols followed guidelines for human participant research outlined by Dublin Business School (DBS, 2025) and aligned with principles of informed consent and data protection under GDPR standards.

3.8 Section Summary

This section outlined the methodological framework guiding the study. A mixed-methods approach was selected to capture both measurable associations and qualitative nuances in investor behaviour. The following section presents the data analysis and results, interpreting how trust, literacy, and behavioural biases shape investor preferences for hybrid versus standalone robo-advisors in India.

Data Analysis and Results

This chapter presents the quantitative and qualitative findings from the survey of the 49 respondents on robo-advisor adoption in India. It explores platform preference, satisfaction, trust dynamics, behavioural influences, and regulatory and ethical perceptions. The goal is to understand how digital literacy, investment experience, and trust shape investor choices between hybrid and standalone robo-advisors.

4.1 Platform Preference

Among 49 respondents, 67% preferred hybrid robo-advisors while 33% favoured standalone platforms. Hybrid models were valued for their combination of automation and human interaction, perceived as safer and more transparent. Respondents commonly noted that 'human validation adds accountability' and that 'technology alone still feels risky.'

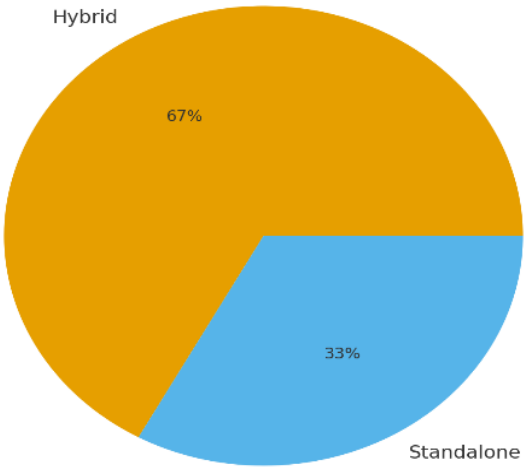

Figure 1. Investor platform preference in India (hybrid vs. standalone). Platform preference among Indian investors (n = 49). A majority (67%) prefer hybrid robo-advisors, indicating sustained demand for human oversight alongside automation

4.2 Satisfaction Across Platform Types

Hybrid users reported higher satisfaction (mean = 4.3) than standalone users (mean = 3.6), reflecting the continued importance of personalised interaction in financial advice.

Platform Type	Mean Satisfaction Score	Standard Deviation
Hybrid	4.3	0.62
Standalone	3.6	0.74

Table 1. Mean satisfaction scores by platform type (n = 49)These results confirm that emotional reassurance and accessibility to human input remain central to perceived service quality in automated finance.

4.3 Investor Trust Levels

Trust emerged as a key differentiator between hybrid and standalone users. Respondents expressed stronger confidence in hybrid models (average trust = 4.4) compared to standalone models (average trust = 3.5). Qualitative responses revealed

that investors equate trust with ‘someone being accountable’ and ‘knowing who to reach if something goes wrong.’

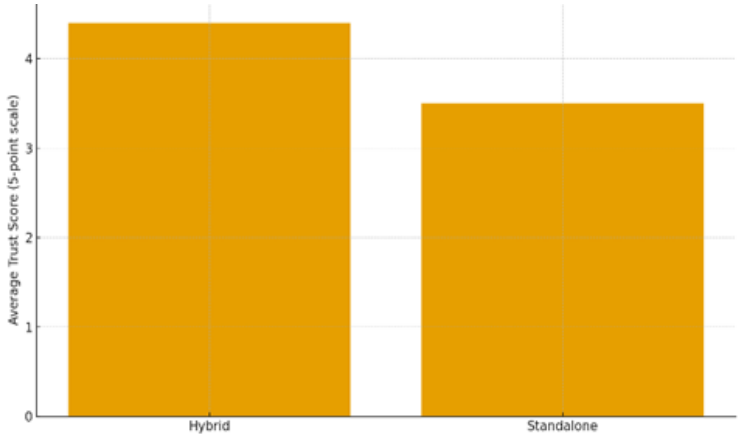

Figure 2. Comparison of Investor trust levels

These findings support H3, which proposed that perceived transparency and accountability enhance trust and drive adoption.

4.4 Digital Literacy and Platform Preference

To test H1 (the relationship between digital literacy and platform preference) and H2 (the association between investor characteristics and platform preference), cross-tabulations and chi-square tests were used. The results show that digital literacy moderates platform preference: investors with higher literacy are slightly more inclined toward standalone robo-advisors, though hybrid systems dominate across all categories.

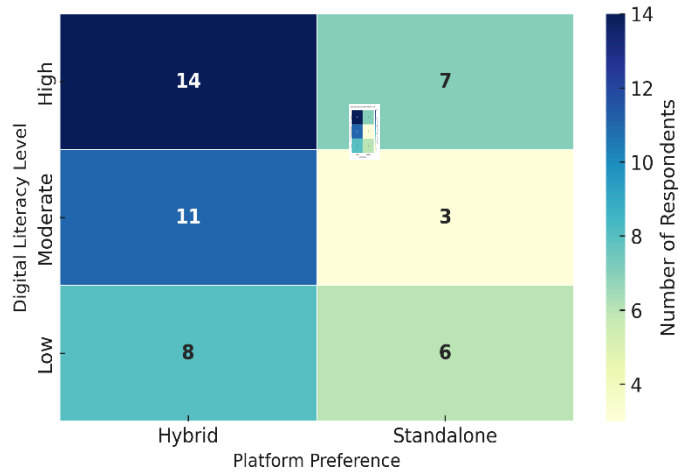

Figure 3. Digital literacy vs. platform preference (n = 49)

The heat map visualises how higher digital literacy increases openness to standalone platforms, though hybrid systems remain preferred overall.

4.5 Key Statistical Associations

Table 2. Chi-square test results for key variables and platform preference (n = 49)

Variable	χ^2 (chi-square)	df	p-value	Association Strength (Cramer's V)
Digital Literacy vs Platform Preference	11.36	2	0.021	0.34
Investment Experience vs Platform Preference	9.24	2	0.043	0.29
Trust vs Platform Preference	14.72	2	0.008	0.37

The chi-square test confirmed a statistically significant relationship ($\chi^2 = 11.36$, $p = 0.021$), with a moderate association (Cramer's V = 0.34). This suggests that while digital literacy influences openness to automation, other behavioural factors – particularly trust – continue to play a strong role.

All three associations were significant ($p < 0.05$), with trust showing to be the strongest. This reinforces the idea that behavioural and experiential factors rather than purely technical ones drive adoption in India's wealth management landscape.

4.6 Regulatory and Ethical Perceptions

Respondents expressed high concern about data privacy (78%), algorithmic transparency (72%), and accountability (70%). These were followed by fairness (65%) and regulatory oversight (60%). These perceptions underscore the role of ethical trust as a condition for adopting technology-led finance.

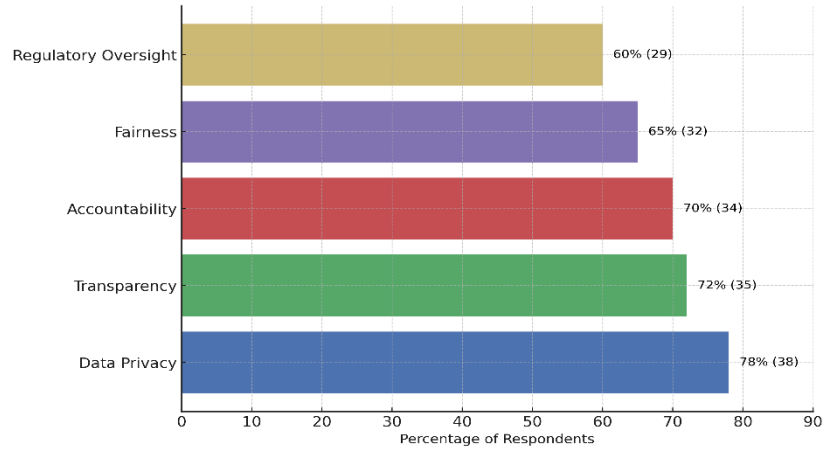

Figure 4. Regulatory and ethical concerns in robo-advisory adoption (n = 49)

Data privacy, transparency, and accountability were the most frequently cited issues among respondents. The following verbatim excerpts from open-ended survey responses highlight these themes:

- "Data handling policies should be more transparent."
- "Who is responsible if the algorithm fails?"
- "Regulators should audit algorithms like financial statements."

These insights support H3, showing that ethical and regulatory trust remain barriers to the wider acceptance of standalone robo-advisors.

4.7 Summary of Findings

The quantitative and qualitative analyses converge on several key insights:

1. Hybrid dominance: Investors prefer human-assisted models that blend automation with personalised advice.
2. Trust and literacy: Digital literacy improves comfort with automation but does not eliminate the need for human validation.
3. Ethical and regulatory sensitivity: Concerns about data privacy and accountability remain major inhibitors to standalone adoption.
4. Moderate associations: Trust (Cramer's V = 0.37) and literacy (Cramer's V = 0.34) show moderate strength of association with platform choice.

Together, these results provide empirical support for the hypotheses and set the stage for deeper interpretation in the Discussion section.

Discussion

This study examined how trust, digital literacy, and investor experience shape the preference for hybrid versus standalone robo-advisors in India. The results reaffirm that behavioural factors, especially relational trust and perceived accountability, remain central to technology adoption in financial decision-making. Yet, unlike findings from developed markets, Indian investors exhibit a sustained preference for hybrid models, suggesting that human interaction continues to anchor trust even as automation becomes mainstream.

5.1 Interpretation of Findings

The dominance of hybrid robo-advisors (67%) highlights a persistent reliance on human judgement in financial contexts. This aligns with findings by Belanche et al. (2019) and Phoon and Koh (2018), who note that even digitally capable investors seek emotional reassurance when financial stakes are high. This study extends that argument by showing that in India, trust acts not only as a comfort mechanism but also as a risk-mitigation tool compensating for uncertainty around data privacy and regulatory enforcement (Zarifis & Cheng, 2022). .

As predicted in H2, investors with lower digital literacy and limited experience displayed stronger hybrid preference, supporting behavioural explanations such as algorithm aversion (Dietvorst et al., 2015) and ambiguity aversion (Kahneman & Tversky, 1979). Conversely, the positive association between digital literacy and openness to standalone models (H1) reflects a generational and cognitive shift rather than a structural one. Even digitally fluent investors valued transparency and accountability, traits typically associated with human oversight, demonstrating that automation acceptance remains conditional, not absolute (Fisch et al., 2019; Sironi, 2016).

5.2 Theoretical Implications

This study contributes to behavioural finance by extending trust theory into emerging-market fintech contexts. Prior models, including the Technology Acceptance Model(TAM), largely treat trust as secondary to perceived usefulness. The present

findings reverse that order: in India, trust is the gateway variable shaping both perceived usefulness and intention to adopt.

This supports Belanche et al. (2019) and Castelo et al. (2020), who emphasise that fintech trust combines both psychological assurance and institutional credibility. By demonstrating that Indian investors coproduce trust through human presence and algorithmic transparency, the study refines existing frameworks to include dual-trust dynamics. This duality relational versus technical trust explains why hybrid systems persist even in digitally mature settings.

5.3 Implications for Practice and Policy

The findings have clear implications for platform designers, regulators, and investor education initiatives.

- For platform designers: Hybrid systems are not transitional but behaviourally optimal for markets where emotional reassurance complements automation. Fintech firms should maintain human touchpoints through periodic reviews, advisory chat interfaces, or transparent algorithm explanations.
- For regulators (the Securities and Exchange Board of India (SEBI) and the Reserve Bank of India (RBI)): Trust deficits arise less from technology and more from opacity and accountability gaps. Regulatory guidance should address algorithmic explainability, data governance, and liability for automated advice. Developing oversight similar to the EU's Markets in Financial Instruments Directive II (MiFID II) may reduce investor hesitation (Sironi, 2016).
- For investor education: Behavioural biases can be reduced by improving financial literacy, particularly around algorithmic logic and data protection. Integrating such modules into Digital India and financial inclusion programs could gradually normalise trust in automation without eroding accountability.

These steps can bridge the behavioural gap between efficiency-driven fintech innovation and relationship-based financial culture.

5.4 Comparison with Previous Research

Globally, researchers have often viewed hybrid models as a transition stage toward full automation. This study challenges that assumption. The findings indicate that hybrid systems may represent a stable equilibrium where investors gain both efficiency and emotional assurance.

Unlike studies in Western markets that prioritise cost and speed (Ashrafi, 2023), Indian investors emphasise fairness, transparency, and relational accountability traits hybrid systems uniquely deliver (Baulkaran & Jain, 2021; Zarifis & Cheng, 2022)

This positions India closer to East Asian behavioural patterns, where trust is relational and context-dependent, rather than Western models based primarily on institutional trust (Fisch et al., 2019; Sironi, 2016).

5.5 Limitations and Future Research

The study's findings should be interpreted in light of certain limitations. The modest sample size (n = 49) limits statistical generalisability, although it remains appropriate for exploratory mixed-methods research. Future studies could employ larger and longitudinal samples to assess how trust dynamics evolve as regulatory clarity and investor familiarity increase.

Comparative research across emerging and developed markets could further examine how trust shifts from relational to institutional forms over time. Additional work could also explore how explainable AI tools influence investor confidence and reduce algorithm aversion.

5.6 Chapter Summary

This chapter demonstrated that in India, investor trust remains the behavioural anchor of robo-advisor adoption. The findings extend behavioural finance theory by showing how relational and technical trust coexist rather than compete. Hybrid robo-advisors emerge not as temporary solutions but as enduring models suited to culturally and institutionally complex markets.

Conclusion and Recommendations

This study examined how trust, digital literacy, and investor experience influence the adoption of hybrid and standalone robo-advisors in India's wealth management sector. Using a mixed-methods approach with 49 respondents, it explored investor perceptions of transparency, accountability, and data ethics, linking behavioural finance theory with technology adoption outcomes. The findings directly addressed the study's three hypotheses.

- H1 proposed that higher digital literacy would increase openness to standalone platforms. This was partially supported. While digitally proficient investors were more comfortable with automation, many still preferred hybrid models, indicating that trust, not just skill, drives adoption.
- H2 posited that lower financial experience and literacy predict stronger hybrid preference, and was clearly supported: investors with limited exposure to financial technology relied more on human validation and perceived security.
- H3 suggested that ethical and regulatory concerns negatively affect standalone adoption, and this was confirmed. The majority of respondents cited data privacy, accountability, and transparency as decisive factors when choosing between platform types.

Taken together, these findings reinforce the proposition that in India, trust operates as a dual construct both technical (confidence in the algorithm) and relational (confidence in human oversight). Hybrid models thrive because they combine efficiency with emotional and ethical reassurance. Rather than being a temporary phase, hybrid robo-

advisors represent a stable model for emerging markets where cultural norms and regulatory maturity continue to shape technology acceptance.

From a policy and industry perspective, the results highlight the need for stronger oversight and education. Regulators such as the Securities and Exchange Board of India (SEBI) and the Reserve Bank of India (RBI) should formalise guidelines on algorithmic transparency, data protection, and accountability for digital investment advice. At the same time, financial literacy initiatives should expand to include awareness of artificial intelligence (AI) -based tools, enabling investors to interpret algorithmic advice with informed confidence. For fintech designers, embedding explainable AI features and optional human touchpoints may enhance adoption and retention.

This research contributes to behavioural finance literature by demonstrating that adoption in fintech depends as much on ethical and relational trust as on technological performance. It extends the global conversation on robo-advisors by showing how socio-cultural and institutional factors redefine investor behaviour in emerging economies.

The study's main limitation, its modest sample size (n = 49), suggests opportunities for future work. Larger and longitudinal studies could validate the behavioural patterns that were found and test how evolving regulation alters trust over time. Comparative studies across markets with varying regulatory structures could also reveal how trust shifts from relational to institutional as investor familiarity grows.

In summary, this study shows that hybrid robo-advisors are not an intermediate step toward full automation, but the providers of a behavioural equilibrium between efficiency and reassurance. As India's fintech landscape matures, sustained investor confidence will depend on how well platforms and policymakers integrate transparency, accountability, and human connection into digital finance.

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Inflation Prediction: A Hybrid Time-Series Approach

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Abstract

Accurately forecasting inflation is a vital aspect of economic strategy. However, it presents challenges due to its complex and often nonlinear nature, which is influenced by a range of external factors. This study explores an integrated modelling framework that leverages both traditional time series analysis and modern techniques to improve inflation prediction. Using economic data from Ireland and the United Kingdom, four hybrid models were developed by combining Seasonal Autoregressive Integrated Moving Average with Exogenous Variables (SARIMAX) with machine learning and deep learning algorithms, namely, Random Forest, Support Vector Regression, and Long Short-Term Memory networks. Among these, the Seasonal Autoregressive Integrated Moving Average with Exogenous Variables and Long-Short Term Memory (SARI-LSTM) model delivered the most consistent performance across key evaluation metrics, Mean Absolute Estimate (MAE), Root Mean Square Estimate (RMSE), and Mean Absolute Percentage Estimate (MAPE), effectively capturing both seasonal trends and sequential patterns in the data. The results highlight the benefit of combining traditional statistical techniques with modern modelling approaches to produce more reliable and interpretable forecasts. This method offers policymakers and economists valuable insights for managing the uncertainties of inflation.

Keywords: Inflation (Finance); Economic Forecasting; Deep Learning (Machine Learning); Time-series Analysis, Neural Networks (Computer Science)

1 Introduction

Inflation refers to the sustained increase in the general price level of goods and services over time, which consequently reduces the purchasing power of money (Investopedia, n.d.). According to Khan Academy (n.d.), the Consumer Price Index (CPI) is commonly used to monitor this change.

Inflation plays a significant role in shaping economic conditions and influences household spending, business investment, and central bank policies. While moderate inflation can sometimes signal a healthy economy, rapid price increases can lead to financial instability. One key factor affecting inflation is immigration. According to the immigration-disinflation theory, increased immigration can help lower inflation by expanding the labour supply, which may put downward pressure on wages (Arthur, 2024). However, this perspective may overlook the fact that immigrants also increase demand in the economy when they spend their earnings, which can counteract the disinflationary effect (Card, 2004).

Many economists, including those at the Federal Reserve, support this theory. For example, Fed Chair Jerome Powell has stated that immigration can lead to slightly higher unemployment and lower wage growth, even in a strong economy. This is because an increase in migrants expands the labour supply, which can place downward pressure on wages and reduce inflation in the short term (Arthur, 2024).

To better understand inflation, it is essential to examine the effects of both supply and demand. Data from the UK show that from the mid-1990s to 2015, the share of working-age immigrants rose from under 8% to over 13%, during which time house prices also surged (Office for National Statistics, 2015). In the same period, Ireland saw a sharp rise in its immigrant population from around 6% to over 17%, accompanied by notable growth in housing costs, reflecting heightened demand and constrained supply (Central Statistics Office, 2024). These examples underscore the interconnectedness of demographic trends, housing markets, and inflation and highlight the importance of considering multiple macroeconomic dimensions when analysing inflationary patterns.

Much of the existing literature on inflation forecasting tends to focus on either single-country studies or broad global models, often overlooking specific external influences such as changes in immigration patterns or fluctuations in housing markets. To address this gap, this research conducts a comparative analysis of Ireland and the United Kingdom, two countries with close geographic and historical ties but distinct economic structures, allowing for an examination of how these external factors may affect inflation dynamics differently across similar yet non-identical economies. The choice of Ireland and the UK as case studies is particularly relevant given their

geographical proximity and shared historical context, yet they exhibit distinct economic characteristics and external influences (Coyle, 2018).

Traditional time series forecasting methods, such as Autoregressive Integrated Moving Average (ARIMA), have known limitations when dealing with the nonlinear and multifactorial nature of modern economic data. Therefore, this study introduces a hybrid modelling strategy combining the strengths of conventional statistical approaches with advanced techniques in machine learning, Random Forest (RF) and Support Vector Regression (SVR), which are capable of modelling complex, nonlinear relationships between macroeconomic variables (Geurts et al., 2006). This makes them well-suited for analysing the effects of external factors, such as immigration, on inflation dynamics. In addition, these methods can handle large datasets and capture intricate dependencies that may be overlooked by more rigid traditional models (Hastie et al., 2009).

By integrating these techniques, the hybrid framework was able to deliver improved forecasting accuracy, even under volatile economic conditions shaped by housing pressures and immigration trends. The study involved developing and testing multiple models using time-series data from both Ireland and the UK, comparing their predictive performance across several metrics. This approach allowed for an in-depth evaluation of how external variables influence inflation and demonstrated that hybrid models can provide more stability and precision during periods of economic uncertainty.

Beyond technical evaluation, this research offers broader insights into how macroeconomic and demographic variables interact. The findings have practical implications for policymakers, economists, analysts, and stakeholders in sectors such as real estate and public finance. Enhanced inflation forecasts can support better decision-making in monetary and fiscal policy.

The report outlines the modelling strategies used alongside the data collection process and methodology. Results are then presented and compared, followed by a discussion on the role of immigration and housing markets in shaping trends in inflation. The study concludes with key insights and practical recommendations to support future research aimed at improving inflation forecasting models in dynamic economic contexts.

2 Overview of Advanced Forecasting Models

2.1 Seasonal Autoregressive Integrated Moving Average with Exogenous Factors (SARIMAX)

The SARIMAX model is a powerful tool for forecasting long-term performance in the energy sector by incorporating seasonal and exogenous factors; this is demonstrated in a study forecasting Saudi Arabia's electricity sector from 2021 to 2050, where SARIMAX improved accuracy relative to simpler models (Alharbi & Csala, 2022). Additionally, SARIMAX has been evaluated against other models for predicting

COVID-19-related deaths, offering insights for future epidemic prediction (Sulistijanti & Khotimah, 2024).

2.2 Random Forest and Support Vector Regression

The evolution of machine learning has significantly advanced time-series forecasting, with models like Random Forest (RF) and Support Vector Regression (SVR) playing important roles. Messaoudi and Khouidmi (2024) demonstrated RF's superior performance in predicting economic growth, highlighting its accuracy and reliability over traditional methods. Similarly, Das and Das (2024) emphasise RF's effectiveness in capturing complex economic interactions during volatile periods such as the COVID-19 pandemic, showing its importance in providing accurate inflation forecasts.

In the context of a solar-assisted, liquid desiccant air-conditioning system, Daghigh et al. (2024) applied RF and SVR to predict key performance indicators, including mass removal rate, efficiency, and effectiveness. The study concluded that SVR with a Radial Basis Function (RBF) kernel provided the most accurate predictions for effectiveness, while RF demonstrated strong predictive performance for other indicators. Additionally, incorporating timestamps as model inputs significantly enhanced prediction accuracy, highlighting the importance of considering temporal and environmental factors, such as ambient temperature and solar radiation, when modelling complex systems.

2.3 Long Short-Term Memory (LSTM)

Long Short-Term Memory (LSTM) networks, a type of deep learning model, have shown significant value in managing sequential data with long-term dependencies. Abuein et al. (2024) demonstrated the effectiveness of LSTM in forecasting stock market trends, where it outperformed SVR and enhanced trading strategies through improved predictive accuracy. Similarly, Foroutan and Lahmiri (2024) conducted a comparative analysis of deep learning models for predicting commodity prices and concluded that LSTM and its variants provide higher accuracy than traditional approaches, showing their superiority in handling complex, time-dependent data.

2.4 Hybrid Models

Hybrid models have gained popularity for enhancing forecasting accuracy by integrating the strengths of both traditional and advanced methodologies. (Mohammed, Arokiaraj and Roobini, 2023)demonstrated this by applying a hybrid ensemble learning approach, combining LSTM with other methods, to forecast the Indian Consumer Price Index, achieving greater accuracy than single models. Similarly, Aldabagh et al. (2023) developed a hybrid model using Convolutional Neural Networks (CNN) and LSTM to predict crude oil prices, showing superior performance over standalone models. Chojnowski (2023) introduced the Linear Smooth Transition Vector Autoregression (LSTVAR-ANN) hybrid model to analyse monetary policy effects and improve inflation forecasts by leveraging different economic dynamics across business cycles.

While advanced machine learning and deep learning models require substantial computational resources and may struggle with less volatile or smaller datasets, hybrid

models address these challenges by providing more robust and generalizable forecasts. (Pereira et al., 2021) Highlight the limitations of ARIMA in capturing nonlinear trends, and its authors propose an optimised hybrid model using SVR and ARIMA to enhance prediction performance. This trend towards combining traditional and machine learning models reflects an effective strategy for tackling the complexities of modern economic landscapes.

3 Methodology: Advancing Hybrid Model Techniques for Improved Forecasting

3.1 Residual-Based Model Training (RMT) and Integration

A comprehensive modelling approach enhances inflation forecasting by integrating traditional, machine learning, and deep learning models. The process begins with the SARIMAX model, which extends the traditional ARIMA approach by incorporating exogenous variables. This makes it suitable for data with significant seasonal components and external influences, such as housing market trends and immigration data. SARIMAX effectively captures these patterns and provides a foundation for a hybrid approach:

$$SARIMA(p,d,q)(P,D,Q,m) + X(1) \quad (1)$$

where:

- p, d, q are non-seasonal order parameters for ARIMA.
- P, D, Q are seasonal order parameters.
- m refers to the number of observations in a seasonal cycle ($m = 52$ weeks for weekly data).
- X are exogenous variables (e.g. housing index and immigration data).

After fitting the SARIMAX model, the residuals representing the unexplained variance are used to train additional models. This residual-based training approach allows subsequent models to focus on capturing patterns and relationships not addressed by SARIMAX.

In the machine learning domain, both RF and SVR models are employed. RF, an ensemble learning algorithm, constructs multiple decision trees to improve prediction accuracy and minimise overfitting. It aggregates predictions from all decision trees to produce a final output, effectively handling complex, nonlinear relationships in the data. SVR, adapted for regression tasks, focuses on fitting the best line within a margin of tolerance, enhancing generalisation and reducing overfitting risks. It optimises the trade-off between the model's complexity and error tolerance, making it suitable for inflation prediction.

The deep learning component employs LSTM networks, which are known for handling sequential dependencies in time-series data. The multivariate LSTM model incorporates various input features such as the housing index, immigration data, stock indices, and

macroeconomic variables, with inflation as the target variable. The architecture of LSTM, including forget, input, and output gates, allows it to capture long-term dependencies and trends influenced by multiple factors over time.

The hybrid framework leverages the residuals from SARIMAX to train RF, SVR, and LSTM models, leveraging their complementary strengths and enhancing the overall predictive performance. SARIMAX addresses seasonal and external factors, while RF and SVR handle complex nonlinearities; LSTM captures sequential dependencies. This layered approach ensures that each model contributes uniquely to refining the prediction, addressing both straightforward and complex trends in inflation data.

3.2 Hybrid Model Integration

Building on the residual-based model training approach, this study further enhances inflation forecasting by integrating various models into hybrid configurations. By combining different forecasting models, their strengths cause better inflation prediction. We developed four hybrid models, each designed to handle straightforward and complex inflation data trends.

1. SARI-SVR: This model combines SARIMAX's ability to handle seasonal and linear patterns with the robustness of SVR in high-dimensional spaces. It effectively captures both periodic trends and complex nonlinear influences. It builds on the residuals from SARIMAX to refine predictions with SVR's precision.
2. SARI-RF: This model integrates SARIMAX with RF and addresses both structured temporal patterns and nonlinear interactions. SARIMAX manages linear trends and seasonality, while RF captures complex variable relationships, using the residuals to enhance its predictive power.
3. RF-SVR: This combination leverages the nonlinear predictive strengths of SVR and RF, providing a nuanced approach to modelling complex, multidimensional relationships between predictors and the target variable. Focusing on the residuals enhances the model's ability to capture intricate patterns.
4. SARI-LSTM: This model pairs SARIMAX with LSTM networks to effectively address short-term seasonality and long-term trends. LSTM captures extended temporal patterns influenced by macroeconomic variables, using the residuals to improve its sequential dependency handling.

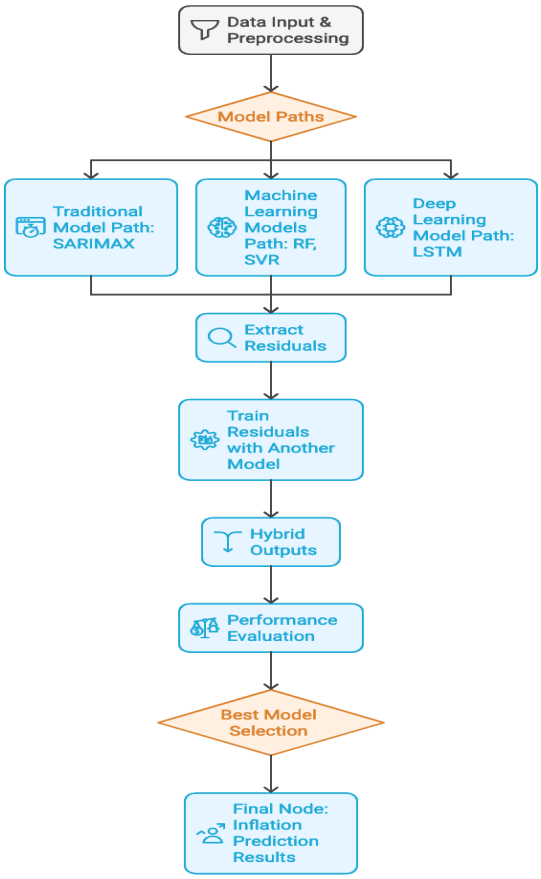

Figure 1. Proposed structure of the hybrid model

4 Evaluation Metrics

Various metrics are utilised to evaluate the models' performances in forecasting inflation, each offering a unique perspective on accuracy and reliability:

1. Mean Absolute Error (MAE): Provides an average measure of errors without regard to their direction; it is useful for gauging model performance with smaller variance data.

$$MAE = \frac{1}{n}\sum_{i=1}^{n} |yi - \hat{y}i| \quad (2)$$

2. Mean Squared Error (MSE): Emphasises larger errors, making it suitable for models like RF and SVR to assess their stability in volatile conditions by penalising significant deviations.

$$MSE = \frac{1}{n}\sum_{i=1}^{n} (yi - \hat{y}i)^2 \quad (3)$$

3. Root Mean Squared Error (RMSE): Converts MSE to the same units as the target variable to offer a more interpretable measure of average prediction error. It is particularly beneficial for analysing LSTM and hybrid model performance on long-term trends.

$$RMSE = \sqrt{\frac{1}{n}\sum_{i=1}^{n}(yi - \hat{y}i)^2} \quad (4)$$

4. Mean Absolute Percentage Error (MAPE): Expresses errors as a percentage, allowing for a relative comparison of prediction accuracy across different inflation rates and providing insight into nonlinear dependency handling.

$$MAPE = \frac{1}{n}\sum_{i=1}^{n}\left|\frac{yi-\hat{y}i}{yi}\right|\times 100 \quad (5)$$

In these equations, n represents the total number of data points, yi the actual inflation rate for the data point, and $\hat{y}i$ the predicted inflation rate. Collectively, these metrics offer a comprehensive view of each model's effectiveness in capturing inflation trends, rendering their respective strengths and weaknesses visible.

5 Dataset Description, Evaluation, and Discussion

5.1 Datasets

This research adopts a quantitative approach, using historical data to analyse inflation trends in Ireland and the UK from 2000 to 2024. It integrates a wide range of macroeconomic variables, including inflation and interest rates, GDP, exchange rates, unemployment, immigration figures, and housing prices and stock indices. These indicators were selected to capture both economic and demographic factors that influence inflation.

Data was obtained from reputable sources such as the UK Data Service, CSO (Ireland), HM Land Registry, Yahoo Finance, and the Migration Policy Institute. These sources provided reliable and up-to-date information to support robust analysis. Where necessary, data were collected through direct extraction and supplemented with publicly available records. To ensure consistency across datasets, pre-processing steps were applied. Quarterly data were interpolated to weekly intervals to allow for uniform time-series modelling. Standard scaling techniques were used to normalise features, preventing larger-scale variables from disproportionately influencing the model outcomes. These steps helped establish a clean and structured dataset suitable for developing and evaluating forecasting models.

To support more accurate and reliable predictions, several engineering steps were taken. The process started with examining relationships between key economic indicators to check for multicollinearity, which could affect the model's performance. Then, the Fourier transform was applied to break down the time series into different frequency components. This helped uncover important seasonal patterns and long-term

trends while reducing random noise. Based on this, Spectral Principal Component Analysis (PCA) was used to simplify the data by focusing on the most meaningful features, making the modelling process more efficient and focused.

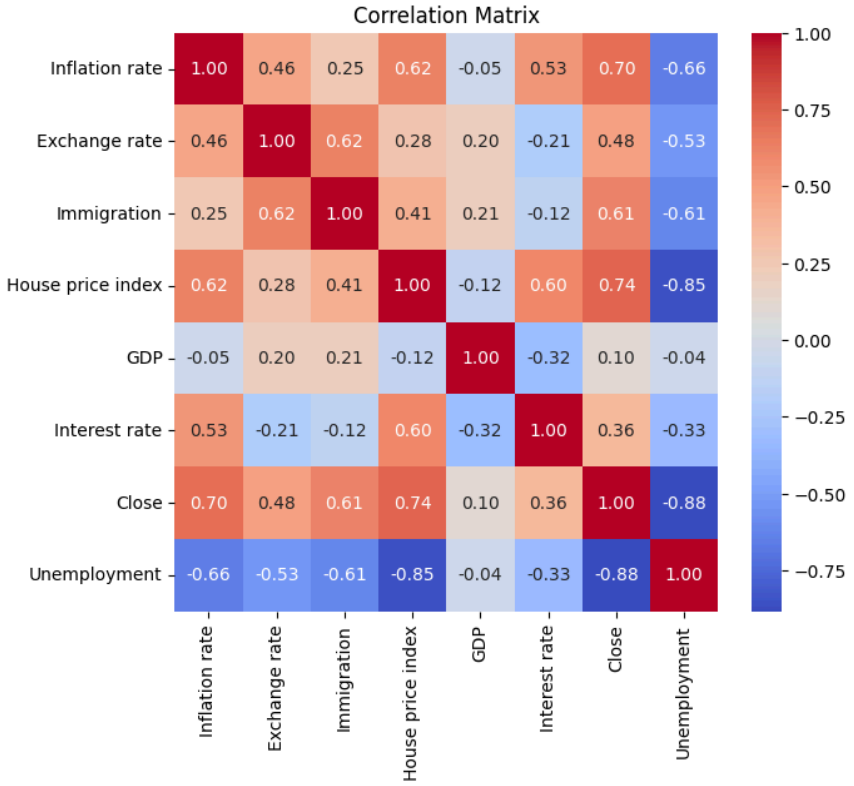

Figure 2. Correlation matrix heatmap

5.2 Evaluation of Core and Advanced Learning Models

Optimising the performance of inflation forecasting models for the UK and Ireland required careful tuning of hyperparameters for SARIMAX, RF, SVR, LSTM, and hybrid models. Table 1 shows the hyperparameters selected to enhance the model's performance.

5.3 Ireland: Model Performance Analysis

In Ireland, SVR emerged as the most effective standalone model, achieving low error metrics, as shown in Table 2. This indicates its capability to accurately capture inflation patterns. Among hybrid models, SARI-LSTM performed best. This model effectively integrated SARIMAX's seasonal forecasting with LSTM's ability to capture long-term dependencies and nonlinear patterns, providing a comprehensive understanding of inflation dynamics. In contrast, RF and LSTM showed higher error rates, highlighting their limitations in this context.

5.4 United Kingdom: Model Performance Evaluation

In the UK, hybrid models generally outperformed standalone models, as shown in Table 3. SARI-LSTM again stood out, achieving the lowest error metrics and demonstrating its strength in combining SARIMAX's linear and seasonal capabilities with LSTM's nonlinear modelling. This integration effectively handled both short-term and long-term inflation trends. Other hybrid models, such as SARI-SVR and SARI-RF, showed competitive performance but did not fully exploit nonlinear patterns as effectively as SARI-LSTM. The LSTM and RF models had higher error metrics, indicating challenges in capturing the UK's inflation dynamics. Overall, the results show the importance of hybrid models in enhancing prediction accuracy, particularly when dealing with complex inflation trends influenced by external factors and nonlinear relationships.

Table 1. Hyperparameter values used in the search process for all methods

Method	Search Hyperparameters	Ireland Values Used	UK Values Used
SARIMAX	*p*, *d*, *q* (ARIMA order)	(1, 1, 1)	(1, 1, 1)
	P, *D*, *Q*, *m* (Seasonal order)	(1, 1, 0, 12)	(0, 1, 1, 12)
	exogenous variables	Housing market data, immigration trends	Housing market data, immigration trends
Random Forest	n_estimators	300	300
	max_depth	10	10
	min_samples_split	10	10
	min_samples_leaf	4	4
SVR	C	1	0.1
	epsilon	0.3	0.3
	kernel	RBF	RBF
	gamma	auto	scale
LSTM	units	150	50
	dropout	0.3	0.3
	epochs	50	150
	batch_size	32	64

Method	Search Hyperparameters	Ireland Values Used	UK Values Used
	learning_rate	0.001	0.001
Hybrid	Combination of SARIMAX residuals and LSTM	Aggregation by addition	Aggregation by addition

Table 2. UK evaluation metrics result

Model	MAE	MSE	RMSE	MAPE
SARIMAX	1.360110457	3.427871656	1.84604216	40.0943852
SVR	1.873443877	8.270713431	2.875884808	40.83583922
RF	3.36597387	14.78348406	3.844929656	109.8109715
LSTM	3.77986103	13.64671376	3.694145877	100.0038479
SARI-SVR	1.357690659	3.35017913	1.830349456	40.65696842
SARI-RF	1.359932724	3.407853513	1.846037246	40.07446789
SVR - RF	2.023507394	8.849290413	2.974775691	46.86965143
SARI - LSTM	1.352255128	3.406692443	1.825722743	40.08913071

Table 3. Ireland evaluation metrics result

Model	MAE	MSE	RMSE	MAPE
SARIMAX	2.625656958	12.74533084	3.570060342	128.9773971
SVR	1.623683273	3.153826733	1.775901668	225.5405491
RF	2.490958831	9.124049783	3.020604208	159.5756332
LSTM	2.232144997	8.472941007	2.910831669	129..88208445
SARI-SVR	2.613142561	12.62117638	3.552629503	129.9081105
SARI-RF	2.613142561	12.62117638	3.552629503	129.9081105
SVR - RF	2.884829137	4.187982727	4.046456139	287.000321
SARI- LSTM	2.122272559	12.068813	3.0508424	128.4045034

5.5 Discussion on Predictive Accuracy

The SARI-LSTM model demonstrated the highest predictive accuracy for both Ireland and the UK. By combining SARIMAX's ability to model seasonal and linear trends with LSTM's capacity to capture long-term dependencies, the hybrid approach outperformed the standalone models. While SARIMAX offered reliable baseline forecasts, the integration of it with LSTM improved performance by accounting for more complex patterns.

As shown in Tables 2 and 3, the SARI-LSTM model produced the lowest MAE and RMSE values across both countries. However, the MAPE metric for Ireland appeared relatively high. This is largely due to low inflation values during certain periods, which can distort percentage-based errors. Despite this, the overall performance remained strong, and the model's reliability is better understood when multiple evaluation metrics are considered together.

5.6 Predictive Analysis of Inflation

In Ireland, the inflation forecast (see Figure 3) indicates a period of relative stability followed by an upward trend. Including both sharp downward and upward trends, according to the LSTM and hybrid models. This projected increase may be influenced by recent economic pressures such as supply chain disruptions, changes in government spending, or residual effects from the COVID-19 pandemic. The pattern suggests the importance of preparedness in fiscal and monetary policy to cushion against inflation surges.

For the UK, the forecast (see Figure 4) illustrates a significant divergence among models regarding future price stability. While the traditional SARIMAX forecast indicates a relatively stable outlook slightly above the 2% target, the LSTM and Hybrid forecasts project considerable volatility near the end of the forecast period.

Specifically, the LSTM and Hybrid models show sharp downward spikes immediately followed by pronounced upward spikes around 2028. This rise likely reflects the influence of structural factors, including housing market pressures, rising demand due to immigration, and broader global economic developments. The ability to anticipate such shifts provides a valuable insight for policy and planning aimed at maintaining price stability and protecting purchasing power. The forecast suggests shifts influenced by immigration, housing, and global trends, emphasising the need for proactive economic planning to preserve stability and protect consumers.

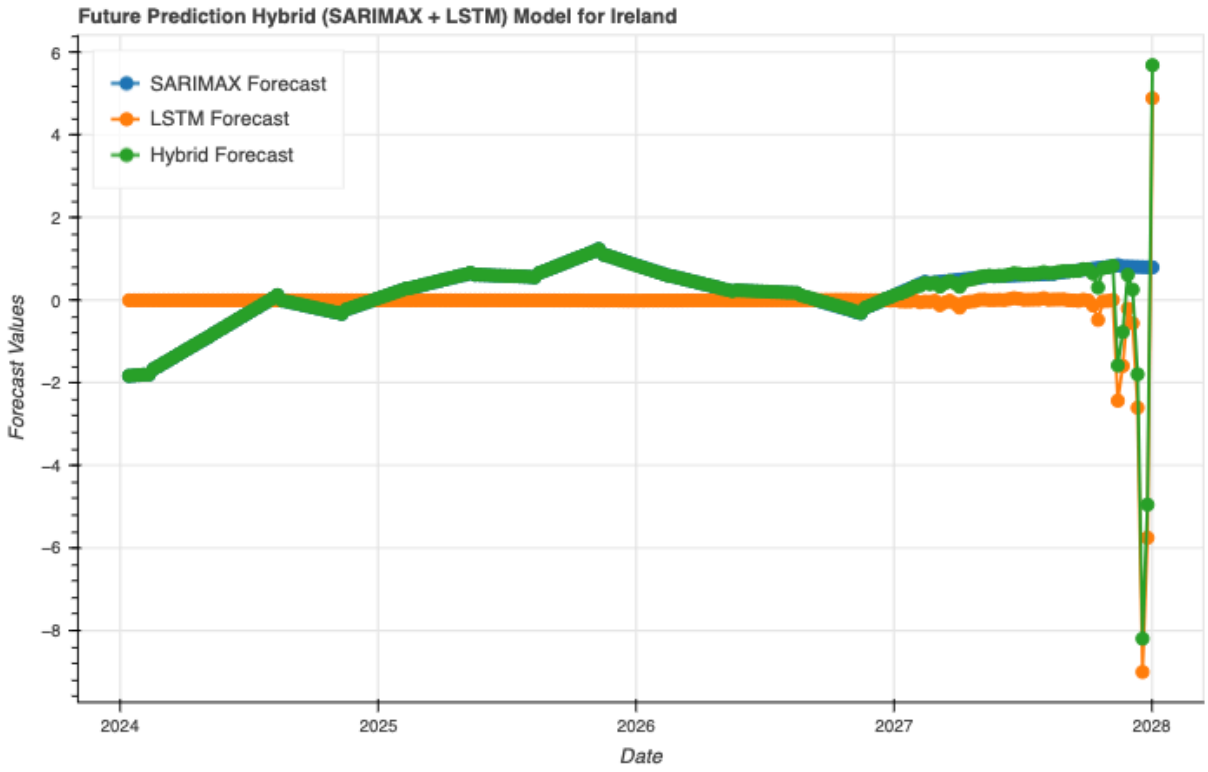

Figure 3. Forecasts of inflation predictions in Ireland by the hybrid model

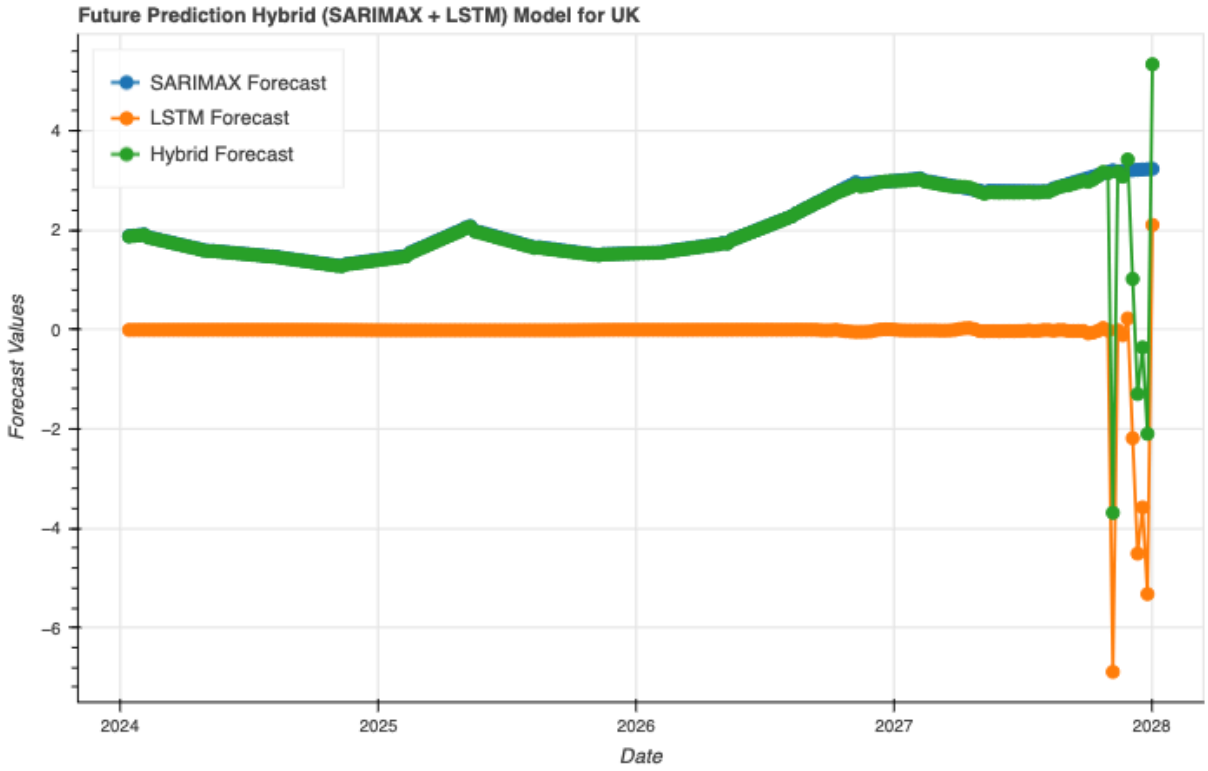

Figure 4. Forecasts of inflation predictions in the UK by the hybrid model

6 Challenges, Conclusion, and Recommendations

6.1 Challenges of Hybrid Modelling

Inflation forecasting is a complex but essential aspect of economic planning. This study demonstrates that combining different modelling techniques – such as traditional time series methods with more flexible, data-driven approaches – can enhance the accuracy of forecasts by capturing both consistent seasonal patterns and more irregular trends. In particular, the SARI-LSTM model outperformed the others in identifying shifts in inflation dynamics across different periods.

However, several challenges were encountered during the modelling process. A key limitation was the slow processing speed of available systems, which affected the training and evaluation of more computationally demanding models. This restricted the depth of experimentation and the number of model variations that could be tested. Another significant challenge was the reliance on historical data, which may not fully account for sudden, disruptive events. For instance, the COVID-19 pandemic had far-reaching economic impacts that were difficult to anticipate using past trends. Such events highlight the limitations of static forecasting models and reinforce the need for regular updates and flexible frameworks that can adapt to evolving conditions.

6.2 Conclusion

Although the results of this study are promising, inflation forecasting remains a challenging task due to the constantly shifting nature of economic variables and external influences. This research shows the potential of combining traditional time-series models with more advanced techniques to better capture both linear and nonlinear patterns. The strong performance of the SARI-LSTM model suggests that integrated modelling approaches can offer improved predictive accuracy. However, as economic conditions evolve, forecasting models must be regularly reviewed, updated, and adapted to maintain their relevance. It is also important to ensure that models used for policy decisions remain transparent and interpretable, particularly when incorporating more complex methodologies.

6.3 Recommendations

To further strengthen inflation forecasting, future research should continue to explore hybrid models that bring together established statistical approaches with more flexible methods capable of learning from patterns in economic data. Efforts should also be made to include a broader range of macroeconomic indicators and apply more advanced feature engineering techniques to extract meaningful signals from noisy data. Additionally, improving the clarity and explainability of complex models is essential, particularly when they are used to inform public policy. Future research should also consider the development of models that can update forecasts in real time as new data becomes available, offering more responsive and practical tools for economic planning.

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Lived Experiences of Struggling Students in E-Learning

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Abstract

Higher education has relied on e-learning as a medium to maintain quality education during the COVID-19 pandemic. With this, excellent instruction has been maintained. This study examines the experiences and problems encountered in e-learning in higher education from the viewpoint of struggling students. From nine participants enrolled in various university programs, students' responses were analysed. As a result, this study emphasises three key themes: 1) the experiences of struggling students with e-learning; 2) the difficulties of struggling students with e-learning; and 3) the influence of e-learning on students' academic achievements. This study has a variety of implications for both teaching practice and future research. The results imply that since individuals' learning styles and techniques vary, course information may not readily transfer from a conventional classroom to an online learning environment. In this phenomenological investigation into the lived reality of e-learning, three primary motivations were identified: asynchronous learning, support acquisition, and social engagement. Attempts should be made to eliminate feelings of isolation and integrate tactics that promote engagement and a sense of belonging into the course's design. Not always is the use of new technology required to produce learning outcomes and student satisfaction. Rather, a focus on subject clarity and high-quality learning tools is often sufficient. Despite juggling several tasks during a challenging period, this particular set of university students would be inspired to continue studying to achieve

their own objectives due to the flexibility and ease of this modality. In light of this study's findings, educational institutions' use of e-learning should be reconsidered. These results also call for a reconsideration of how educational institutions employ e-learning to diverse learners. For struggling students to develop a continuous and meaningful learning environment, it is crucial to examine online activities that promote social connections, professors who are helpful, and the many technical elements that stimulate cooperation. Therefore, it is vital to develop policies that promote relevant learning experiences.

Keywords: Online learning challenges, e-learning, students experiences, struggling students, digital learning barriers

Introduction

E-learning refers to the learning experience that takes place through the use of electronic devices connected to the internet in synchronous or asynchronous environments. Historically, e-learning has been underutilised, particularly in underdeveloped nations. However, in light of the COVID-19 pandemic, our educational system has adjusted to accept new modes of instruction – from face-to-face to entirely remote, or a hybrid. The internet has come to play a critical and important part in all students' academic lives. Textbooks and reference materials, as well as daily assignments and lectures have been phased out in favour of modules and other online resources. This kind of instruction cleared the door for apps like Facebook Messenger, Zoom, and Google Meet to become indispensable for both students and teachers. The widespread usage of these apps to conduct online classes and courses demonstrates that students require reliable, quick, and easy internet access. However, an area of concern facing students living in rural areas is the lack of high-speed internet to attend lectures and conduct evaluations. This is a structural issue: Students from the poorest households who lack access to the internet are more likely to be denied an education, hence aggravating already pronounced educational inequalities.

E-learning was significantly impacted by poor or no connectivity. As more users simultaneously access the internet, network congestion becomes more likely, which can lead to ,lower speeds and internet connectivity. School closures have shown a range of barriers to education access, as well as more widespread socio-economic concerns, but their impact is disproportionately harsh on low-income families (Owusu-Fordjour et al., 2020). In a world where rapid, simple access to critical information is required to learn, many students' academic futures are jeopardised by a lack of internet connectivity. Additionally, it places students in a position where they are unable to continue their study if internet connectivity is not easily available to them (Souvik, 2021). Slow or limited internet connectivity has a significant impact on a student's ability to succeed academically in an online learning environment (Thorburn, 2021). In Ireland, according to recent research on the impact of the COVID-19 pandemic on second-level education (Mohan et al., 2020), over half of schools questioned cited challenges to availability of high-speed broadband and/or adequate digital devices for their students.

Meanwhile, in the Philippines, after President Rodrigo Duterte's announcement of 'no vaccination, no face-to-face classes,' the Commission on Higher Education (CHED) directed colleges to begin planning for distant learning. Several colleges have faced numerous instructional challenges (Mateo, 2020) which have proven tough for Filipino university students to overcome. Complicating matters further is the fact that not every student is capable of providing for and adapting to the rapid advancements of technology in today's digital age (Alvarez, 2020), particularly in developing countries like the Philippines, where education was already plagued by problems prior to the pandemic. E-learning demonstrates a disparity between students who have reliable access to digital devices and internet connectivity and those who lack these essential resources (Santos, 2020). One of the most common issues encountered by struggling students enrolled in distance education is unstable internet access. Typically, this is caused by geographic location (Rotas & Cahapay, 2020). A 2019 national survey revealed that 82.3% of households nationwide do not have internet access (Tamayo, 2021). Senator Sherwin Gatchalian underlined the need to address inadequate internet connectivity and a shortage of devices for learners to continue their education throughout the pandemic. According to him, devices and internet access are as vital to our students and their families as water and electricity (Tamayo, 2021). This current state of remote learning is likely to worsen the already existing disparities in students' access to digital devices, internet connectivity, and technological support, which in turn create obstacle to effective online education. Lack of policy and frequent technology failures were among the obstacles to e-learning. The majority of obstacles and issues identified were attributable to a lack of e-learning-specific training, policies, and guidelines (Al Shamari & Dalil, 2022; Deng & Sun, 2022; Naveed et al., 2022; Qazi et al., 2022). The majority of students in the universities included in this study were dissatisfied with the e-learning process, according to other recent research (Taher et al., 2022). Previously, the most significant obstacles were reported to be the lack of e-learning specific training, policies, and guidelines; however, in the present study, participants identified power outages and sluggish internet speeds as the primary barriers.

Distance education, which was first documented in 1728 by Caleb Phillips as a 'correspondence study,' was the forerunner of e-learning (Holmberg et al., 2005; Kentnor, 2015 as cited by Islam et al., 2021). At the turn of the 21st century, the internet redefined distant education and transformed it into e-learning. Numerous studies on e-learning in various countries have been undertaken, as emergencies such as wars, conflicts, natural disasters, disease outbreaks, and economic repercussions have a direct influence on education. UNICEF (2018) estimates that around 35 million children are being denied an education as a result of conflict or disaster. In Yemen and South Sudan, armed groups have destroyed or seized hundreds of schools. In Pakistan, numerous schools were converted into temporary shelters in the aftermath of Cyclone Sidr in 2007 and the 2010 floods. Similarly, in 2013, the Ebola epidemic in West Africa forced the closure of schools throughout the region. In such instances, distance learning has always aided in the continuation of education. In the final years of the Iraq-Iran War, television channels in Iran were utilised for this purpose (Nassir, 2020). During wars in Syria, Philippines, Sri Lanka, and Afghanistan, short-term open, distant, and flexible learning (ODFL) was offered. New Zealand had measles epidemics in 1991, 1997, and 2011, and for some weeks, all children in the country received distant education (Creed & Morpeth, 2014).

Following the 2011 earthquake there, the University of Canterbury promptly implemented e-learning technology for its students, including a learning management system, web conferencing, recorded voice, and video (Ayebi-Arthur, 2017). More recently, Najran University in Saudi Arabia used e-learning initiatives to offer online lectures and evaluations while the campus remained closed owing to the political turmoil with Yemen (Rajab, 2018).

The recent global outbreak of COVID-19 has provided another example in which e-learning has been viewed as a lifesaver by and for academic institutions. The duration of this crisis has resulted in a stronger reliance on e-learning than ever before. In this approach, e-learning continues to complement traditional classrooms, making teaching and learning conceivable, feasible, and adaptable. Institutions worldwide choose to use (to the extent feasible) e-learning with its many Learning Management System (LMS) and other web-based systems. The United Nations (UN) and World Health Organisation (WHO) view online e-learning as a valuable instrument for satisfying educational requirements, particularly in developing countries(UN,2022; WHO, 2023). The shift to online education in response to the coronavirus pandemic posed new issues for instructors, students, and parents worldwide. While face-to-face education has traditionally been the favoured mode of instruction, remote learning is fast becoming the new norm today. However, many instructors, school systems, and families still struggle to adjust to their new e-learning settings. With a growing reliance on stable internet connections, the COVID-19 pandemic exposed significant connectivity issues in the Philippines and throughout the world.

For some, purchasing facilitative learning equipment may be challenging (Santos, 2020). Consistent with earlier studies, students often perceived internet accessibility as a barrier rather than a benefit in e-learning, particularly when connectivity is unstable (Almaiah et al., 2020; Cullinan et al., 2021; Rotas & Cahapay, 2020). For them, it is important that access is both timely and of high quality. They stressed that despite broad expansion of internet infrastructure, particularly in metropolitan regions of the Philippines, it's unsurprising that dependable internet access remains a long way off (Alvarez, 2020). When examining the hurdles to e-learning as indicated by the survey, it was discovered that insufficient and unpredictable internet access, insufficient computer laboratories, a shortage of computers, and technical difficulties were the most significant impediments to adapting to e-learning (Zalat et al., 2021).

Moreover, Cullinan et al. (2021) present evidence that students with less access to internet services may also be disadvantaged in terms of computer access for educational reasons. Some of the reasons why most institutions weren't ready for e-learning services were the lack of consistent internet connection across the Philippines and students' lack of access to internet facilities. Furthermore, poor internet infrastructure and load shedding continue to be major roadblocks to carrying out online activities of any significance (Islam, 2021). Some students assess their internet connection's quality as average to poor in a survey conducted on assessing distance learning in higher education (Elfirdoussi et al., 2020). Surprisingly, some students do not even have access to the internet (Elfirdoussi et al. 2020), and those from low-income backgrounds face particular challenges because of their lack of access to digital technologies. Students who may benefit from instructional technology are hampered by the digital divide (Fox, 2016). Students and their families suffer as a

result of such inequality. There is a digital gap in education, and students on the wrong side of it are not equipped for the high academic standards of the 21st century.

Despite attempts to make education more accessible to all, students who pursue remote education still face several hurdles. Numerous studies have been undertaken to document the stress (AlAteeq et al., 2020; Baloran, 2020) and other obstacles faced by students in their respective virtual learning spaces (Cullinan et al., 2021). While the digital divide in terms of internet connectivity is critical, there can also be gaps in terms of access to appropriate equipment or environment in which to work from home, or the digital literacy skills necessary to engage in online learning. For example, as compared to students from better socioeconomic level households, students from lower socioeconomic status families are less likely to have access to the internet, a computer, or a suitable learning environment (Lamb et al., 2020; Silva et al., 2018). Additionally, they are less likely to have well-developed information and communication technology abilities (Lee, 2017; Ortagus, 2017; Stich & Reeves, 2017 as cited by Cullinan, 2021).

The goal of this qualitative study was to find out the experiences of students at the North Eastern Mindanao State University Cantilan Campus whose online learning is often disrupted by poor connectivity. Further, it sought to investigate how difficult their encounters are and collect data on how the students deal with their struggles and challenges. It is necessary to study the students' issues and experiences of e-learning in order to develop an intervention strategy.

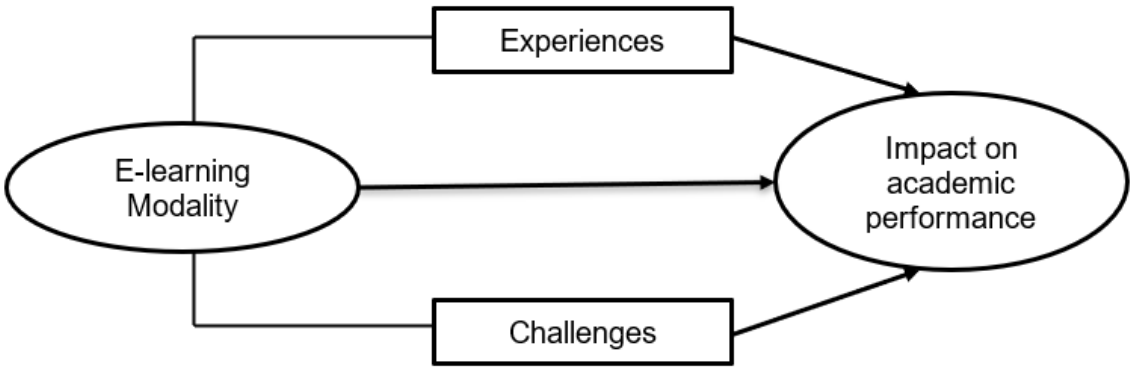

Figure 1. Conceptual Model

Research Questions

The main questions for the study were as follows:

1. What are the experiences of university students while on e-learning?

2. What are the challenges faced by the students and how do they overcome the problems?

3. What policies and interventions do students need?

Methodology

This study employed qualitative research methods in conjunction with a phenomenological research design to examine the lived experiences of struggling students while utilising e-learning during and since the COVID-19 pandemic. The phenomenological approach described the participants' interpretations of their experiences. This choice was influenced by Nacar and Camara (2021) and Tuffour (2017), who assert that the purpose of phenomenology is to convey the meaning of experience from the perspective of the experiencer – in terms of 'what' and 'how' the experiences occur. A semi-structured interview guide was also employed to gather data for the study with the goal of gaining an in-depth knowledge of the viewpoints of the participants.

Results and Findings

The sections that follow provide an analysis of data collected via semi-structured interviews, which were recorded and then transcribed. This research highlighted three primary themes:

1. The experiences of struggling students about e-learning;
2. The challenges of struggling students regarding e-learning; and
3. The impact of e-learning on students' academic performance.

Experiences of students on e-learning

Table 1. Individual experiences of the participants while on e-learning

Experience	Participant
Difficulty in coping the lesson	Participants 1, 5, 9
Poor Connectivity	Participants 2, 3
Stressful	Participant 4
Difficulty due to unavailable gadget	Participants 6, 7, 8

Adjustment issues have been one of the most prevalent participant replies. The majority encountered a rapid shift in the learning environment. Student 1 said,

> For me, face-to-face lectures are better than online learning, since I am unable to access sites and cannot often comprehend the lessons given in the Google Classroom.

Given the shift from face-to-face to online instruction, struggling students had difficulties adapting to the new norm. Student 4 described how he had to learn how to navigate each button inside the Google Classroom and Google Meet applications.

> Due to the sluggish signal, e-learning is not very effective. Occasionally, I am unable to connect to the platform.

Similarly, Student 5 mentioned having difficulty during the first weeks of online instruction.

> It is quite challenging, particularly in my programming subject. I don't have a laptop or android phone at home. I sometimes borrow from my relative.

She claimed that online learning doubled the stress of students. Other participants cited financial concerns as being one of their e-learning obstacles. Student 3 said,

> Since I do not own a smartphone, I am unable to attend online lessons since I cannot afford to visit an internet café.

Challenges of students with e-learning

Table 2. Challenges encountered by the participants during e-learning and how they overcome them

Challenge	Participant	Way to overcome
Poor connectivity	Participants 1, 2, 3, 9	Positive location; positive mind set
No hands-on activity	Participant 2	Positive mind set
Difficulty in sitting exams using phones	Participants 4, 5	Time management
No available device	Participants 6, 8	Borrowed gadget
Absence of IT skills and knowledge	Participants 7, 9	Time to learn online learning applications

These themes examine the difficulties experienced by participants as a result of e-learning. This also examines the participants' methods of overcoming obstacles and taking responsibility for their education. Internet connection constraints had the greatest frequency among the five themes indicated in Table 2, which was correlated with the participants' responses. They said that they were encountering challenges due to its restrictions and unavailability. They were acquainted with situations which made it difficult for them to attend synchronous classes and engage in online activities. Technology subjects and laboratory time cannot be taught via Zoom, Google Meet, or other video-streaming applications. Student 2 complained,

> Because we were unable to do hands-on troubleshooting, it is tough. We are just imagining the situation.

Student 4 claimed,

> It is difficult to answer the worksheets just by using my cell phone because I lack sufficient IT skills and knowledge.

Most participants discussed and exhibited tenacity despite the circumstances, enabling them to continue. The most effective and prevalent coping strategy was a positive mindset. With the aid of their optimistic outlook, they were able to overcome their obstacles. Information Technology Student 6 described how she managed the obstacles she faced by developing strategies to complete her academic requirements despite the challenges.

> I learned how to organise my time for homework so that I could complete all things without feeling unmotivated.

Impact of e-learning on academic performance

Table 3. Impact of online learning to their academic performance

Impact	Participants
Low grades/not good performance	Participants 1, 2, 3, 4, 5, 9
Failed in some subjects	Participants 5, 8
Dropped from class/ some subjects	Participants 7, 8
Confusion	Participant 6

Due to the aforementioned obstacles in e-learning, several students said that they failed certain courses and even dropped out of school. Others stated they received poor grades because of uncertainty. A Information Technology Student 6 said,

> During our midterm examinations, the internet connection abruptly went down, thus I was unable to complete my answers and received a very low score.

Likewise, Student 5 expressed the same sentiments: 'I even failed in my major subject.' Student 8 voiced the same thoughts on his unavailability of a personal smart phone.

> I could not access the Google Classroom lectures and exercises, therefore I dropped the class.

Conclusion

In conclusion, this research has numerous implications for both teaching practice and future research. First, these results imply that course material may not easily transfer from a traditional classroom setting to an e-learning environment, since students' learning rate and techniques vary. Therefore, the material and teaching techniques of e-learning should be developed to facilitate students' learning while fitting their learning styles and preferences. Second, attempts should be made to eliminate the sense of alienation and tactics included for fostering interaction so that students can

have a sense of belonging. Before the commencement of the course, students should be encouraged and instructed on how to form virtual groups. As a future research focus, the development of best practices for promoting successful e-learning facilitation and forming virtual communities is noted. Third, as revealed by the students who participated in this research, learning results and satisfaction are usually achieved by an emphasis on clear content and high-quality learning resources, and not necessarily the use of advanced technology.

Recommendations

In this investigation into the lived reality of e-learning, we identified three primary motivations: asynchronous learning, support acquisition, and social engagement. While developing countries struggle to maintain quality and ongoing learning since the COVID-19 pandemic, stakeholders in higher education should also recognise that students have diverse requirements. Therefore, it is necessary to develop measures that promote relevant learning experiences. This is a chance for universities to examine the efficacy of various educational techniques and design their own hybrid models of teaching specific to their particular requirements. Families' input should be solicited in order to establish a beneficial learning environment for everybody. Long-term, the aforementioned measures will produce changes in the education delivery system, necessitating further testing, quality control, and regulation. To meet this need, the government should create regulatory agencies. Similarly, immediate modifications should be made to the present education budget to accommodate these educational reforms.

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Teachers' Perception of Using Tablets in Teaching and Learning Environments: A Qualitative Study

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Abstract

New learning technologies are an important part of the 21st-century academic environment. Tablets are the newest mobile learning technology added to today's classrooms. This research concerns an island school's teachers' perception of using tablets in the classroom. Understanding the teachers' perceptions of using tablets in the teaching and learning environment is vital as this can provide information on future development and implementation. Four teachers were interviewed to gather the data. This study was qualitative and explored a constructivist approach. The findings are based on four themes identified from the participants' responses: utilisation of tablets in the present classrooms, benefits of using tablets in the classroom, challenges teachers face when using tablets in the classroom, and effective ways of utilising tablets to enhance teaching and learning. The study recommends different approaches to improve the use of tablets in such environments.

Keywords: Tablet computers in education, Educational technology, Teachers' attitudes, teaching practice, Educational technology problems

Introduction

Over the past twenty years, technology has progressed in the education sector. Integration of technology into the learning environment enhances the development of the process skills of students (Boholano et al., 2021). By using technology, teachers can effectively deliver their lessons to cater to the different learning styles of students. Teachers use different pedagogical approaches with educational technology to improve student learning. Student-centered learning has a higher priority today, and it is being carried out with the implementation of educational technology in the classroom. In a technology-integrated learning environment, students can explore themselves and take responsibility for their learning. According to Bitner and Bitner (2002), 'using technology as a teaching and learning tool in the classroom does so to an even greater extent since it involves both changes in classroom procedures and the use of often unfamiliar technologies' (Bitner and Bitner2002).

However, the use of technology such as computers has expanded at all school levels, and a modern technological device, named a 'tablet computer,' has entered into the teaching and learning environment. Tablets are electronic mobile devices, smaller than laptops and bigger than smartphones, with a touchscreen display. Zhang and Nouri (2018) conducted a systematic review highlighting the role of tablets in learning and teaching. In this technologically focused world, the tablet plays a vital role in the education system. It provides learning opportunities for students with different learning styles through their many applications and inclusion of interactive media. The interaction of the graphic application of the tablet enables visual learners to create multimedia schemes and think visually and watch videos (Zhang & Nouri, 2018). Zhang and Nouri further described that tablets contribute to visual learners' learning opportunities and positively affect auditory learners, such as by delivering audio messages to students.

There has been a major change in the Maldivian education system in the last few years with the implementation of a new national curriculum. This curriculum emphasizes integrating technology in the learning environment under the key competency, 'Using technology and media' (National Institute of Education, 2015). This encourages schools to digitalize by integrating technology into the classrooms.

In 2017, the Minister of Finance announced that the government would digitalize all the schools and that school bags would be replaced with tablet computers by the following year. In addition, the minister revealed that approximately 9.97 million USD would be allocated for school digitalization projects in the proposed budget for 2018 (Corporate Maldives, 2017). The ministry tasked the Maxcom company with distributing the tablets to every school. Over 70,000 tablets have been imported into the Maldives throughout this process. The main objectives of this project are to offer possibilities for students to be engaged in a technology-enhanced environment that fosters learning, enhances teaching, and develops essential life skills.

The Ministry of Education conducted online training programs for teachers to prepare them to use tablets in the classrooms. Moreover, wireless internet connections were set up in all public schools with the help of a leading telecommunication company, Dhiraagu. The distribution of tablets to the students began at the start of the second semester in 2018, with most schools beginning to use tablets the same year (Ibrahim, 2018).

However, some schools have not implemented tablets due to various reasons. This research aims to understand teachers' views on using tablets in classrooms, as well as the benefits and challenges they face in the teaching and learning environment. Studies reveal that, in some instances, students use tablets for entertainment rather than using them for their learning. Fabian et al. (2018) showed that students who play games and use tablets to use social networking sites waste valuable time. As a result, students are often distracted during instruction due to the fun features of tablets (Meo and Martí-Ballester, 2020).

Statement of the problem

With educators constantly looking for new ways to improve pedagogical practices through technology, tablet integration into the classroom is becoming increasingly common (Kim et al., 2019). Although much research has been done on the effects of tablets on education, little is known about how teachers feel about using tablets in the classroom. Understanding how they view and adjust to using tablets is essential for developing successful implementation strategies and guaranteeing the devices' successful integration into educational settings as technology advances. Thus, a qualitative study that explores teachers' perspectives, attitudes, and experiences with tablet usage is required to give educational practitioners, policymakers, and researchers useful information.

In this technologically enhanced world, children are exposed to technological devices at home and are often vulnerable to the negative side of technology. Mobile tablets are considered used in education, and recently, this device has been implemented in Maldivian schools. Using tablets in the classroom is challenging for teachers in many ways. Teachers struggle to implement tablets properly in the classroom due to a lack of knowledge. In addition, they face difficulties in managing the classroom as students do not always use tablets properly. As students are vulnerable to the negative use of technology, they misuse tablets rather than use them for learning, creating a negative impact on student learning. This study is done to address the above issues and find solutions.

Objective of the study

This study aims to acquire teachers' thoughts on implementing tablets in Maldivian classrooms. The core objectives of this study are to explore how tablets can be used efficiently to improve teaching and learning environments and to identify the benefits and challenges of using tablets in teaching and learning environments. The benefits and challenges included in the study are only from the teachers' perspective.

This study focuses on three areas: the teachers' perception of using tablets in the Maldivian classrooms, the benefits of implementing tablets according to their perception, and the challenges they encounter when implementing them. The three research questions that emerge to guide this study are as follows:

1. How can tablets be used efficiently to improve the teaching and learning environment?
2. What are the teachers' perceptions of the benefits of using tablets?
3. What are the teachers' perceptions of the challenges to implementing tablets?

The research is significant for both students and teachers, as it will guide students on effectively using tablets in the classroom. Teachers are crucial stakeholders who must clearly understand tablets and their uses to improve the teaching and learning

environment. A positive learning environment for students can be achieved if teachers are familiar with tablets and have a clear understanding of their uses. Conversely, if teachers lack knowledge and are not aware of how to implement tablets correctly, schools may not achieve the implementation objectives of tablets, leading to problems in the learning environment and negatively impacting student learning. Therefore, this study will enlighten teachers about the effective utilization of tablets in their teaching and ways to manage the challenges they encounter while implementing them in the classroom.

Scope and limitations

Four teachers from the Maldivian School, who teach at key stage two, have been chosen to conduct this study. The participants for the study were selected based on a minimum of two years' experience in teaching and experience in using tablets in the classroom.

However, there are some limitations that came across in this study. Since it was conducted in one school, the samples might not be representative of the population at large. Relevant data might not be established because the researcher selected participants according to their teaching experience. Interviews were the only technique used to collect data for this study. Other qualitative data collection techniques, such as classroom observations, could have improved the dataset.

Literature Review

This literature review related to the study is designed to provide a theoretical framework and analysis of previous and recent research about implementing tablets in the classroom. It is divided into four sections. First, a theoretical framework. Second, the section is based on the overview of tablets in teaching and learning environments. Third, advantages and drawbacks of using tablets in the classroom are discussed. Fourth, a discussion of teachers' perceptions of tablet implementation in the classroom.

Theoretical framework

Constructivism is based on the belief that people learn by building their own knowledge and understanding from their own experiences and by reflecting on those experiences. According to Adams and Burns (1999), in a constructivist classroom, the role of the teacher is transformed from a knowledge provider to a facilitator who guides the students in building their own knowledge. When conducting online games and activities using tablets in the classroom, the teacher acts as a facilitator, guides the students, and helps them learn on their own. This results in a student-centered learning environment. Adams and Burns (1999) further describe that knowledge is built through different types of tools, resources, encounters, and settings. Therefore, by using tablets in the classroom, the students build their knowledge through relevant information from the internet and videos.

Much of the research in educational technology indicated that using computers in educational settings improves student learning and plays a key role in delivering knowledge (Koç, 2005). According to Shah (2019), in a constructivist classroom, students are actively involved in sharing ideas, discussing concepts with their peers, and questioning one another, leading to an increased awareness and understanding of their own learning processes. Using mobile learning technology therefore enables

the creation of a constructivist learning environment where both social and cognitive constructivism occur. Tablets in an educational setting enable students to actively participate in the learning process. As a result, more appropriate and meaningful learning can be obtained.

These research findings match the constructivist approach to learning, where students actively participate in the learning process by collaborating with their teachers and peers. Adopting tablets in the classroom creates a student-centered learning environment where the teacher is the facilitator and all collaborate to construct knowledge.

Tablets in the teaching and learning environment

Tablets have become a key issue of interest in education to boost learning. They are easy to use and have the capacity to store huge amounts of data that can be used in the classroom. According to Samuel (2021), because of their versatility, low cost, and interaction features, tablets have the potential to have a massive effect on reading. Teachers use tablets in the classroom to deliver their lessons and carry out different pedagogical activities. Using innovative pedagogical methods, teachers use tablets to change and reshape students' learning (Major et al., 2017).

Research has been done on the use of tablets in the teaching and learning environment. They are used in the instructional process to provide a positive learning environment where students show their interest and engage in the lesson. Major et al. (2017) demonstrate that tablets in the classroom setting increase students' participation and engagement in the lesson. Tablets are used in the instructional process to provide a positive learning environment where students show their interest and engage in the lesson. Studies reviewed that tablets in the classroom setting increase student participation and engagement in the lesson (Haßler, Major, & Hennessy, 2016). According to Ulas et al. (2019), using tablets in the learning environment can improve students' learning. While talking about the different instructional uses of tablets in the classroom, Cummings and Hill (2015) state that tablets can be used for different instructional tasks, but it may not be effective to use them in every aspect of the classroom.

Students are one of the most important stakeholders who utilize tablets in a tablet-implemented classroom. Recent research done by Ditzler, Hong, and Strudler (2016) on the utilization of tablets in the classroom showed all students who took part in the study used the tablets for their classroom learning and homework. In addition to this, while observing the classroom, Ditzler, Hong, and Strudler (2016) found that students used their tablets during the whole class session to work on their projects, and they were interacting with each other by sharing ideas. Moreover, their study found that students were very satisfied to use tablets for their learning.

Advantages and drawbacks of using tablets in the classroom

Using tablets in the classroom has numerous benefits for students and teachers. Teachers carry out different collaborative learning activities using tablets, such as online collaborative games and activities for students. According to Fabian et al. (2018), teachers can use tablets to conduct activities with the students by carrying out short surveys and quizzes on mathematical simulations, which students can enjoy and easily understand. According to Enriquez (2010), tablets improve students' engagement with the lesson and positively affect students' learning and performance.

According to Li et al. (2022), the main benefits of using tablets are improving creativity and metacognition by using software applications, saving costs for students by using digital content, and improving interaction between students and teachers and peers within the school environment.

Integration of tablets in the learning environment, on the other hand, has various drawbacks. The most common difficulty teachers face when implementing tablets in the classroom is their lack of knowledge about the tablet. This was addressed in the research problem of this study. Some teachers do not know how to use it in their teaching. This was addressed in the research problem of this study. According to Ditzler et al. (2016), the teacher's level of knowledge and comfort has a major effect on how tablets are utilized in the classroom, and the lack of familiarity of the teacher with tablets has been seen as complicated.

Teachers' perception of using tablets in the classroom

Research on tablets found that teachers have both positive and negative perspectives on using tablets in the classroom. Although the integration of tablets in classrooms has increased in recent years, research on teachers' perceptions of their use remains limited. While few studies have examined this topic, Gökmen et al. (2018) provide some insight into teachers' attitudes and experiences with tablet use in education. Their study highlights that teachers believe tablets save time by enabling them to finish the lesson within a short period, have positive learning outcomes, and allow subjects to be examined, all helping to increase student success.

The same study (Gökmen et al., 2018) further indicates that teachers are not interested in using tablets in the classroom. According to the teachers who participated in their study, the reasons for not using tablets in the classroom were that they lacked the knowledge to use the tablets in the classroom, and according to their viewpoint, tablets have negative effects on classroom management as students misuse them by playing games in the classroom. These findings suggest that, although some information exists, further research is needed to fully understand the factors influencing teachers' adoption and effective use of tablets in teaching and learning environments.

Methodology

Research design

This study uses a qualitative model, a case study approach, to investigate a specific event or entity in its real-world setting. This method involves in-depth research using interviews, observations, and document analysis. Case studies are crucial for understanding unique events, investigating relationships of cause and effect, and formulating hypotheses. They provide a comprehensive perspective, allowing researchers to analyze multiple factors within a defined framework. Through careful data analysis and interpretation, case study research is essential for theory creation, practical applications, and decision-making in various fields like psychology, sociology, business, and education. From the different approaches to qualitative research described by Creswell (2013), the case study is closely oriented with the aims and objectives of this research and focuses on the benefits and challenges teachers face when implementing tablets in their classrooms.

Population and sampling

The study's target population is all the teachers of a Maldivian school. The school's easy access made it an ideal choice for the study. Since this is small-scale qualitative research, the study's participants were narrowed down to four teachers teaching key stage two. The selection of teachers was based on their qualifications and number of years' experience. They needed at least a diploma certificate in primary teaching with a minimum of two years' experience. As tablets were introduced in the Maldivian schools in 2018, the participants needed to have experience teaching with tablets as well.

Data collection

Qualitative research studies often include several data sources such as interviews, participant observations, field notes, documents, conversations, accounts, memos, life histories, artifacts, and diaries (Creswell, 2012). For this study, interviews are used as a primary data source.

In-depth interviews were used to gather data for this study since they allow the participants to share their views, attitudes, and behaviors. The research questions were answered in face-to-face interviews with the participants. The interviews for this study were conducted at places of the participants' choosing. They were informed of the structure of the interview and how it would be carried out. The purpose of the study was clearly explained to the participants before data collection began, and they were given the opportunity to ask questions to avoid misconceptions. In line with general ethical guidelines for research involving human participants, including informed consent and voluntary participation, written consent was obtained from all participants prior to their involvement in the study.

The interviews were semi-structured, using open-ended questions allowing respondents to freely express their views and ideas. Core questions were asked according to the interview guide created in advance. In addition, probing questions were used in the interview to better understand the participants' viewpoints. The interviews ranged from 30 to 45 minutes. Additional notes were taken while carrying out the interview. With the permission of the participants, audio-recorded interviews were carried out. Each interview was transcribed, and the data were arranged by giving a reference code to each participant. This was done to secure the anonymity of the participants.

Data analysis

The data mainly include the teachers' perception of the benefits and challenges of using tablets in the classroom. Interviews with participants were conducted and transcribed. The transcribed data were sorted for analysis, and the participants' responses were coded manually. According to Creswell (2012), the coding process is the starting point for data analysis. Coding can be defined as using descriptive words to mark data segments (Creswell & Creswell, 2017).

The research questions were answered, and themes were generated through categories that were established according to the similar codes discovered from the participants' responses. After that, themes were identified by categorizing the codes. A total of four themes were discovered from these categories: utilization of tablets in current classrooms, benefits of tablets, challenges for teachers, and effective ways of utilizing tablets to enhance the teaching and learning environment.

Ethical considerations

Ethical issues are involved in every study, irrespective of the type of research. A relevant ethical structure for the study was established before the data collection. It contains documentation such as information letters and consent forms.

Ethical approval for this study was granted by the Maldives National University Research Ethics Committee, under a general (blanket) approval for educational research involving minimal risk to participants. An approval letter for collecting information from schools was received from the Ministry of Education. Before collecting data, a letter was sent to the school requesting permission to conduct the research using the teachers of that school. The approval letter from the Ministry of Education and an information sheet and consent forms were also attached. The data collection was carried out only after receiving the approval letter from the school.

Participants were provided with necessary information about the study before each interview to minimize any potential psychological or emotional discomfort. Consent was obtained through a consent form, and participants could withdraw at the beginning of the interview if they didn't want to participate. Personal information was kept confidential, and permission was obtained orally and on consent forms before recording. Recordings were secured with a password and saved in a separate folder. Participants were given a corresponding alphabetical letter code, ensuring their identity was not revealed.

Results and Discussion

This study aimed to understand teachers' perceptions of using tablets in the classroom. Interviews with four teachers were conducted to answer research questions. Four main themes emerged from the data: utilization of tablets in current classrooms, benefits of tablets, challenges for teachers, and effective ways of utilizing tablets to enhance the teaching and learning environment. I will deal with each in turn. Sub-themes were developed under each main theme, focusing on the teachers' perceptions of the benefits and challenges of using tablets, their methods of utilizing them, and their recommendations for the future. The findings provide valuable insights into the use of tablets in the classroom.

Utilisation of tablets in the present classroom

As mentioned in the introduction, tablets have been implemented in Maldivian classrooms since 2018. This theme includes the participants' perceptions about using tablets in the classroom and how they use them in their present classrooms. The sub-themes here are collaborative tasks, ICT integration, and inquiry-based learning.

Collaborative tasks

When technology is integrated into the classroom, teachers are obviously responsible for facilitating innovation. Supported by the literature given in this paper about tablets in the teaching and learning environment, this study found that teachers use tablets in their instructional process to carry out different collaborative activities. These include online games, quizzes, and other interesting activities that are used to carry out an engaging lesson. While answering the researcher's question, the participants explained how tablets are used in the classroom.

Participant B said,

> Normally I use it to conduct online games like Kahoot!, group activities […].

Participant C,

> Normally for science, social studies, and math, these subjects carry out the quizzes […].

Participant D,

> Tablets allow students to work together more effectively. For example, I assign them research projects where they must use tablets to gather information and then present it as a group activity. This enhances teamwork and engagement.

ICT integration

The data collected by the study reveals that teachers have positive thoughts about using tablets in the classroom and use them to carry out different collaborative activities. While expressing thoughts about implementing tablets in the classroom, participant B stated,

> What I believe is, tablets are a great device, a helpful tool for teaching and learning, if it is used appropriately. As we all know, there are two sides to everything, and so are the tablets. The ways of using it measure the effectiveness.

Participant D said,

> With tablets, I can integrate more digital tools into my lessons, such as educational videos and interactive learning apps. This allows me to cater to different learning styles.

Inquiry-based learning

Inquiry-based learning encourages students to explore the topics themselves by sharing their ideas and questioning about the topic. Using tablets in the classroom encourages students to explore and find information independently. Findings from the study indicate that teachers use tablets in the classroom to carry out inquiry-based lessons. While answering the question about the utilisation of tablets in the classroom, participant C said,

> They can search on their own and they can get the information on their own […].

In addition to this, participant C also explained how they carried out the lesson. While discussing this, they explained,

> Once I did an inquiry based learning project in a social study subject, about a country. So, what I found is that the information that I have collected is different from the students. So, if I give them, they can collect more information. So, like that about that country, they have collected as much information as they want. Like, their culture, their values, how they treat the people, and their behavior—everything they collected. So, what I found is, in a teaching and learning environment, this is the best way that we can use tablets in the classroom.

While answering this question, other participants also supported this by mentioning that they allow students to use tablets to find information independently. Therefore, it can be concluded that teachers carry out inquiry-based learning in their lessons. According to Harwood et al. (2015), learners can be motivated by their willingness to use tablets, enhancing their sense of agency as they seek their choice of study.

The study's findings indicate that in some schools in the Maldives, teachers use tablets in the classroom to conduct collaborative activities, integrate ICT during the lesson, and carry out inquiry-based learning activities.

Benefits of using tablets in the classroom

Implementing tablets in the classroom has several benefits as mentioned in the literature review. This theme includes the participants' perception of the benefits of using tablets in the classroom. The sub-themes that emerged from this theme are a positive learning environment, a constructivist classroom, and a convenient method.

Positive learning environment

According to three participants, tablets in the classroom enable them to carry out interesting lessons by using different online and collaborative activities. Using various teaching strategies and pedagogical activities in the classroom, students will find lessons more interesting, improving their motivation and engagement throughout the lesson. The findings indicate that using tablets in the classroom enhances students' interest, engagement, and motivation towards the lesson by participating in online games and other collaborative activities. Therefore, this creates a positive learning environment where students can actively engage in the lesson. Participant B stated that,

> students are motivated when we use tablets in the lesson, like playing online games and doing collaborative work. They show a lot of interest in these activities, and they create a very positive and fun learning environment where students enjoy their learning. Students show their interest in the lesson, and it helps the teacher to gain their attention as well.

Participant C said,

> one quiz I conducted in science. So, it was really interesting; you know, the students were also very interested.

Furthermore, while talking about the benefits of using tablets in the classroom, participant A said,

> We have a lot of benefits, like they have more interest, they are more engaged in the lesson […].

Research on tablets in education has found several benefits for students learning. According to Fabian et al. (2018), tablets can enhance students' engagement and support interactive learning experiences. In classroom settings, using tablets helps learners focus on lessons and actively participate in activities, thereby improving attention and interest in the subject matter. The most obvious advantage of using advanced technology in the classroom is the opportunity to inspire students and provide an extremely customized educational experience (Li et al., 2022). Enhancing student motivation, gaining the attention of the students, and students actively participating in the learning process are some of the features of a positive learning environment. Therefore, this study reflects some aspects of previous literature, that using tablets in the classroom creates a positive learning environment.

Constructivist Classroom

Supporting the study's theoretical framework, the findings indicate that using tablets in the classroom creates a constructivist learning environment where students construct knowledge on their own by using tablets. This study found that using tablets in the classroom enables students to find information independently to use in their projects. While discussing this, participant B said,

> students take the responsibility of their learning when they use these tablets. That means that the students search for information, collect information, and use that in their projects and posters […].

It has been noticed that teachers provide names and links of websites that the students can use to search for information. While discussing this, participant B stated that,

> In my lesson, before giving the task to students, I give them all the URLs and names of the websites that they can use to search for information. I usually share the URLs through Google Classroom. So, they can search only using those links or websites. And I always monitor them, watch them closely while they are using the tablet.

Furthermore, participant B explained,

> they read those and find the required information on their own. And I believe this is very beneficial for students as they will gain new knowledge through this.

Participant C said,

> students get involved with that, and I found it very interesting and very good for the lessons even […].

From these findings, it can be concluded that using tablets in the classroom supports the constructivist approach by enabling a constructivist learning environment for students to build their knowledge.

Convenient method

Tablets are handy, and they can be used anywhere and anytime. In this technologically enhanced world, tablets play a vital role in the education sector, from reading books to finding information. Using tablets in the classroom enables teachers to save time while conducting different activities in the classroom. As mentioned earlier, tablets enable teachers to create and conduct different online activities in the classroom, saving time spent manually creating those activities and games.

The results of this study indicate that using tablets in the classroom saves teachers time when carrying out activities in the lesson. Teachers use tablets during the lesson to explain, show pictures or videos, and carry out online games and other activities.

Discussing this point, participant A stated,

> real pictures they can see instead of teachers just pasting a picture on the board, they can see it on the … I mean using a tablet. So, a lot of time can also be saved from teachers' side.

Participant D agreed:

> Carrying heavy textbooks is a burden for students. Tablets provide easy access to reading materials, making learning more efficient.

Participant B said,

> it is time-saving when we use tablets in the classroom […].

Tablets allow teachers to minimise paperwork and can be used for reading anywhere and anytime. As previously mentioned, teachers can prepare and share worksheets with Google Classroom. They do not have to carry all printed materials to the classroom. Today, teachers often use tablets instead of printed materials.

While discussing this, participant A stated,

> Teachers don't have to carry a stack of papers to the classroom. So, it reduces the paperwork that we have to do […].

Participant B said:

> It also reduces paperwork. That means instead of giving worksheets, I mean hard copies, I am sharing those worksheets through Google Classroom so students can access it […].

This study reveals several benefits of using tablets in the classroom. It helps to create a positive learning environment where students are motivated and actively engaged in the lesson, and creates a constructivist learning environment where students work collaboratively with teachers to build their knowledge. Furthermore, the study's findings indicate that using tablets in the classroom helps teachers save time and reduces paperwork.

Challenges for teachers in using tablets in the classroom

The sub-themes developed from the challenges for teachers in using tablets in the classroom are as follows: misuse of tablets; lack of awareness about tablets; poor internet connection; and restricted applications.

Misuse of tablets

Findings aligned with other studies, revealing that students misuse tablets in the classroom. According to the participants, many difficulties arise regarding students' use of tablets for activities other than learning. According to the teachers, some students use the tablets to play games, take photos, or adjust device settings during class, which distracts them from the lesson, interrupts the flow of teaching, and can divert other students' attention.

Participant A stressed,

> One thing that I have faced is that sometimes these students use tablets when they don't need them, like in other classes. They take the tablet, and they play with it. So, that is one challenge that we face. And another thing is that some work they do is unnecessary; sometimes they play unnecessary things also. The teacher always has to be aware in the classroom, what they are doing. The teacher always has to check what they are doing.

While talking about the challenges they face, participant B stated,

> Sometimes the students, some students, get off task while using these tablets. They may do some unnecessary work using these tablets. Like playing with it, taking photos […].

Also, participant B explained that sometimes, some students play with their settings, and they forget their passwords. So, when the teacher conducts an activity, these students can't participate. The teacher then has to fix these problems or go to another person to fix them.

Moreover, participant B stressed,

> I have noticed that many other teachers also complain that some students use their tablets during other subject periods when they don't have to use them. Some students keep playing with it when the teacher explains the lesson.

The findings indicate that teachers face many challenges when using tablets in the classroom, supporting the literature reviewed earlier.

Lack of awareness about tablets

As mentioned in the introduction, the tablet is a recent educational tool in Maldivian classrooms. Therefore, teachers and students know little about using it for educational purposes. Findings from the study indicated that it is challenging for teachers to use tablets in the classroom because of a lack of awareness about the device.

Participant B stated,

> There are some teachers who are not aware of using these tablets […].

Participant C explained,

> In the beginning, it was very difficult. Because the students are also very new. Some might have computers at home, and they might use tablets, but many do not use them. So, it was a very big problem for us.

Furthermore, participant C said,

> Before, the students were not aware of these tablets, so they found much difficulty even while searching from the browsers […].

Participant D stated,

> Even teachers need better training on tablet usage. Some of my colleagues avoid using them because they lack confidence in handling digital tools.

Supporting the literature given in the study, one of the biggest challenges teachers face while implementing tablets in the classroom is not having enough knowledge about using them. This study revealed that teachers and some students do not have enough knowledge about the device and how to use it for their learning.

Poor internet connection

Having a proper internet connection in the school is one basic aspect that must be fulfilled when implementing tablets in the classroom. As mentioned in the introduction, before implementing tablets in the Maldivian schools, wireless internet connections were set up in all the schools. However, the findings indicate that slow internet speed is the most challenging factor while implementing tablets in the classroom.

Discussing the challenges of using tablets, participant C stressed,

> Internet connection is a very big challenge for us. Because of all the students in a classroom, there will be 20 to 25 students. So, all of them, all the students, will be searching for information at a particular time, at the same time. So, that time, the internet will slow down, and it will become a big challenge for us, even some documents will not be loading.

Participant B concurs,

> The biggest difficulty I face when using tablets in the classroom is slow internet. Because of this slow internet speed, it is difficult to carry out online games and activities using tablets. When the students do their work and submit it to Google Classroom, it takes a lot of time because of the internet speed, and sometimes the connection may be lost or very slow. So they cannot submit their work.

Supporting the previous literature, slow or poor internet connection is the most common challenge teachers and students face when using tablets in the classroom. Because of the poor internet connection, teachers face difficulty carrying out the lesson as planned. Therefore, this affects students' learning, and much of their time will be wasted.

Effective ways of utilising tablets to enhance the teaching and learning environment

Under this theme, the participants' opinions about how tablets can be used effectively to improve the teaching and learning environment are discussed. These are mostly recommendations from the participants about how to use tablets in future classrooms. The sub-themes derived from this theme are close monitoring, restrictions, training for teachers, formative assessment, and replacing textbooks and hard copies with tablets.

Close monitoring

The study's findings showed that when using tablets in the classroom, teachers need to monitor their students closely and be aware of what is happening in the classroom to have an effective teaching and learning environment.

Participant B stated,

> Teachers have to be very much aware, and they have to monitor the students closely […].

Participant C said,

> We should go around to them and we should check whether they are collecting the appropriate information […].

Restrictions

According to the participants, tablets can be very effective tools in the classroom if usage restrictions are implemented, such as limiting access to games and social media, restricting non-educational apps, and setting clear guidelines for appropriate use during lessons. According to the participants, while restrictions on non-educational use are important, allowing controlled access during lessons enables teachers to show topic-related videos and allow students to search for relevant information, thereby enhancing learning. As mentioned earlier, tablets were implemented in Maldivian schools only very recently. Students cannot use them to watch videos or download applications. Therefore, teachers face difficulties when using these tablets to carry out different activities in the classroom.

Participant B stated,

> We can show different videos related to the topic by using this tablet. Since all the students have tablets, it would be easy. So, no need to go to the AV room just showing a video […].

Training for teachers

The study revealed that teachers do not know enough about using tablets in the classroom. Hence, the study participants suggested that training sessions for teachers about using tablets would enhance their knowledge about tablets and improve the teaching and learning environment. While discussing this, participant B said,

> Schools should provide effective training sessions for teachers about using tables. Using Google Classroom also […].

Formative assessment

According to the participants, tablets can be a helpful tool to carry out formative assessments. Using online games and activities, teachers can carry out formative assessments in the classroom.

Participant B stated, "[…] Most importantly, tablets can be used to carry out formative assessment, which plays an important role in our new curriculum […]." (refer to appendix H). According to participant B, online quizzes like 'Kahoot' is a great tool for conducting formative assessments.

Replacing textbooks and hard copies with tablets

The findings indicate that replacing textbooks and other hard copies with tablets will improve the teaching and learning environment. Participant B stated,

> Instead of always using books, we can use tablets for reading. Like stories, different articles, and all. Also, most importantly, it would be very helpful and more interesting if we could use tablets instead of textbooks […].

Furthermore, participant B added that textbooks are so heavy that students, especially secondary students, find it difficult to bring them to school. For example, their mathematics textbook is so heavy that they don't want to bring it to school. So it would be helpful if these tablets replaced the textbook.

According to the participants, tablets can also be a helpful tool to carry out formative assessments, such as using online games and activities. Participant B stated,

> Most importantly, tablets can be used to carry out formative assessment, which plays an important role in our new curriculum […].

According to Participant B, online quizzes like Kahoot! are a useful tool for conducting formative assessments.

The study suggests that tablets can be used as teaching aids to improve the teaching and learning environment. Instead of using manual materials, tablets can display pictures, charts, graphs, and videos. Teachers can also create folders and share them via Google Classroom, allowing students to access and upload their materials. However, effective use requires proper guidance and training. Tablets, such as online games and activities, can also be used for formative assessment tasks. Teachers can incorporate different teaching strategies using tablets. This study emphasises the benefits of replacing textbooks with tablets, such as convenience and storage and eliminating the need for heavy bags and paper stacks. Teachers should monitor student usage and ensure proper use of tablets, leading to a better learning experience for students.

Conclusion and Recommendations

From the findings, it can be concluded that using tablets in the classroom has both positive and negative impacts on students and teachers. Implementing tablets in the classroom creates a positive learning environment where students are motivated and actively involved in the lesson. Teachers can carry out interesting lessons by using tablets in the classroom. Furthermore, it leads to a constructivist classroom, where students collaborate with teachers and build their knowledge independently. On the other hand, the study concludes that it is challenging for teachers to use tablets in the classroom as students misuse them, and teachers do not have enough knowledge about tablets. In addition to this, the findings reveal that the most challenging factor for teachers when using tablets is a poor internet connection.

The study recommends different approaches to using tablets effectively to improve teaching and learning environments. The study recommends that schools provide training sessions for teachers on using tablets in the classroom, minimise the restrictions applied to the tablets, and monitor students closely when using tablets in the classroom.

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ADHD and ASD in the Irish Workplace: Lived Experiences, Generational Differences, and Pathways to Inclusion

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Abstract

This study explores how neurodivergent professionals with attention-deficit/hyperactivity disorder (ADHD) and/or autism spectrum disorder (ASD) in Ireland navigate workplace identity, organisational culture, career development, and well-being , with attention to generational differences. While international research has examined disclosure, stigma, and accommodations, little is known about how these dynamics unfold in the Irish context, where neurodiversity is not explicitly recognised in employment law.

A qualitative design was employed, using semi-structured interviews with ten professionals across Generation X, Millennials, and Generation Z. An inductive thematic analysis identified five conceptual domains: Identity and self-presentation, workplace dynamics and inclusion, career and development, well-being and coping, and generational context. Together, these domains informed a conceptual framework that depicts workplace inclusion not as a fixed outcome but as a cyclical, non-linear process shaped by ongoing negotiation.

The findings show that disclosure was a situational strategy balancing authenticity and risk; managerial influence was decisive in shaping inclusion or exclusion; career success was reframed in terms of balance and meaningful contribution; well-being was precariously sustained through coping strategies and support networks; and generational context shaped diagnostic pathways, identity formation, and expectations of inclusion.

The study contributes by advancing a framework of inclusion as dynamic and iterative, introducing generational identity as an interpretive lens, and providing one of the first qualitative accounts of neurodivergent professionals in Ireland. These insights carry implications for organisations, managers, and policymakers, underscoring the need for systemic neuroaffirmative practices that move beyond reliance on individual disclosure or managerial discretion.

Keywords: Autistic People—Employment—Ireland; People with Attention-deficit Hyperactivity Disorder—Employment—Ireland; Neurodivergent People; Diversity in the Workplace—Ireland; Identity (Psychology) in the Workplace—Ireland; Generational Differences in the Workplace—Ireland

Introduction

Neurodiversity has become an increasingly visible concept in workplace and policy discourse, yet the lived experiences of neurodivergent professionals remain under-examined, particularly in specific contexts such as Ireland. The neurodiversity paradigm challenges deficit-based perspectives by recognising neurological differences as natural variations of the human mind (Singer, 2017; Stenning & Rosqvist, 2021). Neurodiversity, as a term is based on the biological fact that human brains and nervous systems differ from person to person. Asasumasu (2018), who coined the term neurodivergent writes, ‘Neurodivergen[ce] just means a brain that diverges […]. It is specifically a tool of inclusion.’ As such, neurodiversity incorporates all forms of neurotypes, including neurotypical. According to this definition, a person cannot be neurodiverse; they can be neurodivergent. This framing has been influential in shifting research and practice from a focus on pathology toward models that emphasise equity and inclusion. Within employment contexts, scholarship has highlighted both persistent barriers and emerging opportunities for ASD and ADHD professionals, ranging from issues of disclosure and stigma to accommodations and recognition of strengths (Bury et al., 2021; Doyle, 2020; Hotte-Meunier et al., 2024). However, while the international evidence base is growing, relatively little attention has been paid to Irish workplaces, where neurodiversity is not explicitly recognised in employment law (NDA, 2025; OECD, 2021). This creates a significant gap in understanding how neurodivergent professionals in Ireland navigate identity, culture, and career and whether international findings can be translated into this distinctive context.

Workplace inclusion cannot be fully understood through static models of compliance or accommodation. Instead, it requires attention to the everyday strategies through which neurodivergent professionals negotiate identity, belonging, and well-being in professional environments. Disclosure, masking, and advocacy are not one-off acts but ongoing processes. Equally, workplace structures and managerial practices can either enable or constrain participation, shaping not only performance but also long-term career trajectories. These processes are dynamic and relational, requiring analysis that accounts for both personal agency and systemic conditions.

Generational context adds a further dimension to these dynamics. Diagnostic criteria, cultural attitudes, and access to support have shifted significantly over recent decades, influencing both when individuals receive recognition and how they present themselves at work (Abdelnour et al., 2022; McDonald, 2020). For example, Generation X professionals often have spent much of their working lives undiagnosed, relying on self-devised coping mechanisms in environments where ASD and ADHD are poorly understood. Their relationship to disclosure is therefore shaped by caution and retrospective reinterpretation. Millennials, by contrast, came of age during an era of expanding mental health discourse and digital communities, yet they still face limited workplace recognition and risk of stigma. Many in this cohort reframed their experiences through late or self-diagnosis, creating hybrid strategies of cautious disclosure and informal support-seeking (Friedman et al., 2024; McDonald, 2020). Generation Z entered education and employment at a time when diversity, equity, and inclusion discourse was more established and earlier diagnoses available. Their approach to neurodivergence tends to emphasise openness, authenticity, and collective advocacy, reflecting broader generational priorities around belonging and transparency (Deloitte, 2025; Francis & Hoefel, 2018). Examining these intergenerational shifts is essential for understanding how inclusion is differently negotiated across cohorts, and how policy and practice can respond.

Ireland represents a particularly important context for this inquiry. While the country has ratified the United Nations Convention on the Rights of Persons with Disabilities (UNCRPD), neurodiversity remains absent from employment law, meaning that workplace inclusion relies largely on broader disability frameworks such as the Employment Equality Acts 1998–2015 (Government of Ireland, 2000). This leaves neurodivergent employees dependent on managerial discretion and organisational culture rather than clear legal protections. Recent national surveys highlight both the prevalence of neurodivergence and the limitations of current workplace practices: Nearly one in ten Irish adults identify as neurodivergent, yet half report not disclosing their neurodivergence at work, and 45% describe their workplace as non-inclusive (Bank of Ireland, 2024). Autistic professionals, in particular, face disproportionately high unemployment or underemployment rates, with up to 85% reporting exclusion from meaningful work (AsIAm, 2023). These statistics suggest that while Ireland has made progress in disability rights, neurodivergent professionals remain an under-supported and under-researched segment of the workforce.

This study addresses these gaps by exploring how neurodivergent professionals in Ireland navigate workplace dynamics through the dual lenses of lived experience and generational identity. A qualitative design was employed, using semi-structured

interviews with ten professionals diagnosed with ADHD and/or ASD across three generational cohorts (Generation X, Millennial, Generation Z). Thematic analysis identified five interrelated domains: 1) Identity and self-presentation, 2) workplace dynamics and inclusion, 3) career and development, 4) well-being and coping, and 5) generational context. Together, these provide a framework for understanding workplace inclusion not as a fixed outcome but as a cyclical, iterative process. The study contributes to understanding in three key ways: Conceptually, it extends existing models of workplace inclusion by emphasising its dynamic and cyclical character; theoretically, it integrates generational context as an interpretive dimension, showing how historical and cultural forces shape both diagnoses and workplace expectations; and empirically, it provides one of the first qualitative accounts of neurodivergent professionals in the Irish workplace, amplifying perspectives that remain under-represented in both national and international scholarship.

The neurodiversity paradigm

The current neurodiversity paradigm conceptualises ASD and ADHD as natural variations of the human mind rather than pathologies (Singer, 2017; Stenning & Rosqvist, 2021). This approach challenges the medical model, which frames such phenomena as deficits, and instead situates disability as emerging from the interaction between individual traits and unsupportive environments (Chapman, 2019; Dwyer, 2022). Research emphasises that inclusive practices require systemic adaptation to cognitive and sensory diversity, recognising strengths and challenges (Cleveland Clinic, 2022; Shah et al., 2022). Neurodivergence is therefore not a fixed diagnostic category but a socially constructed and culturally mediated concept shaped by medical discourse, self-identification, and societal norms (Goldberg, 2023; Stenning & Rosqvist, 2021). In the workplace, this paradigm reframes neurodivergence as valuable rather than a liability, positioning inclusion as a matter of organisational equity and cultural change (Antony et al., 2024; Doyle, 2020).

Common workplace challenges and barriers for autistic individuals and those diagnosed with ADHD

Neurodivergent employees, particularly those with ADHD and ASD, face persistent workplace barriers due to environments that are not designed with neurodiversity in mind (Hotte-Meunier et al., 2024; Pfeiffera et al., 2017). Autistic employees often struggle with unspoken social expectations, difficulties interpreting subtle social cues, and workplace cultures that favour extroversion and interpersonal fluency, factors that can lead to misunderstandings, social exclusion, or even disciplinary actions (Diener et al., 2020). Fear of disclosing a diagnosis is also common, with individuals anticipating stigma or being perceived as less capable, even when their qualifications and performance say otherwise (Diener et al., 2020). Whelpley et al. (2021) write about how autistic individuals in their study felt a ‘drastic change in treatment’ after disclosure, often feeling patronised – contrasting with the desire for equal treatment.

Importantly, diagnostic pathways are shaped by gendered patterns (Bölte et al., 2023; Cook et al., 2024; Craddock, 2024). Research shows that ADHD and ASD frequently present differently in women and girls, contributing to underdiagnosis or misdiagnosis

across the lifespan (Bölte et al., 2023; Cook et al., 2024). These disparities carry significant implications for workplace inclusion, as many women only receive recognition later in life, often after prolonged periods of coping without formal support (Craddock, 2024).

Employees with ADHD may face challenges such as distractibility, time management difficulties, and poorly sustained attention, especially in fast-paced or unstructured work environments (Hotte-Meunier et al., 2024). However, these challenges are often misattributed solely to individual shortcomings, rather than being seen as mismatches between the individual and their environment (Bury et al., 2021). Research shows that a poor fit between individuals and their environment significantly reduces job satisfaction and retention among autistic employees, underscoring the need for more adaptive workplace design (Pfeiffera et al., 2017). Milton (2012) highlights that many of these difficulties are relational, describing the 'double empathy problem,' where both autistic and non-autistic individuals struggle to understand one another due to their fundamentally different perspectives.

Frameworks for accommodations and support

To mitigate these barriers, recent literature promotes a shift from deficit-oriented models toward neuroaffirmative, strengths-based approaches (Antony et al., 2024). Coaching tailored to the unique strengths, communication preferences, and self-advocacy needs of neurodivergent individuals has shown to have a positive impact, especially when integrated into broader workplace practices rather than being directed solely at the neurodivergent employee (Antony et al., 2024). Addressing the 'double empathy problem' requires coaching and awareness-raising efforts that include neurotypical peers and managers, fostering mutual understanding and reducing the tendency to pathologise difference (Milton et al., 2022). Practical accommodations such as consistent routines, clear communication, reduced sensory overload, and flexible work arrangements are especially effective in supporting employees with ADHD and/or ASD (Bury et al., 2021; Hotte-Meunier et al., 2024). For example, adjustments like quiet workspaces, visual aids, and predictable schedules can improve both comfort and productivity for autistic employees (Bury et al., 2021). Recruitment processes also require revision: Traditional interviews that emphasise charisma or group interaction may disadvantage neurodivergent candidates, whereas structured, skills-based hiring better supports inclusive talent acquisition (Diener et al., 2020). Ultimately, fostering neuroinclusive workplaces requires more than policy, it demands a cultural shift toward valuing neurodiversity as a source of innovation, resilience, and equity (Antony et al., 2024).

This is not to suggest that neurodivergent employees should be merely accommodated in employment. Research has indicated that many neurodivergent people possess skills and talents that surpass their neurotypical counterparts, and they can contribute as much if not more in the workplace (Loison, 2024). Whelpley et al. (2021) indicate that autistic individuals can offer significant value, including high attention to detail; ability to perform repetitive, cognitively demanding tasks; trustworthiness, reliability and potential for innovation and increased team productivity. Such findings reinforce the concept of neurodiversity as difference

instead of deficit. As such, companies such as Ernst and Young, SAP, and Microsoft have extended their inclusion policies to increase the number of neurodivergent employees in their workplace (Wiederhold, 2020). Despite these initiatives and the evidence that supports the added value of a neurodiverse workforce, neurodivergent people, particularly autistic people remain one of the least employed groups from all disability groups, and those that are employed are often under-employed (Ezerins et al., 2024; Loison, 2024). With participation rates varying between 32% of autistic adults engaging in any kind of paid work according to Romualdez et al. (2021) to only 15% in the Irish population (AsIAm,2023). The quantity of literature has expanded in line with these initiatives (Doyle & McDowall, 2021). This trend is evident in bibliometric patterns: for example, Google Scholar searches for 'neurodiversity employment' yielded approximately 2,050 results between 2013–2017, compared to more than 16,900 between 2018–2025. Similarly, the term 'neurodiversity workplace inclusion' produced just 708 results in 2013–2017, but over 11,700 in 2018–2025. Such figures highlight a dramatic growth of academic interest in the intersection of neurodiversity and work, reflecting increasing recognition of its importance within organisational research and practice.

Ezerins et al. (2024, p. 27) identify three major barriers to inclusive practice: 'the broader social context, workload, and lack of knowledge about autism.' This often means that the success of any endeavour to be neuroaffirmative is entirely reliant on individual managers' energy, skill, and time (Austin & Pisano, 2017). Findings from literature on ways to create neuroaffirmative workplaces include coaching (of the entire workforce, not exclusively the neurodivergent employees), leveraging technology to increase accessibility, overcoming geographical barriers, and offering opportunities for personalised feedback and continuous learning (Antony et al., 2024).

Neurodivergent inclusion in the Irish context

Ireland's approach to neurodivergent inclusion in employment is developing with national disability policies and European Union obligations (EU-OSHA, 2025; NDA, 2025; NeuroDiversity Power Project, 2023; OECD, 2021). Although the Irish government signed the United Nations Convention on the Rights of Persons with Disabilities (UNCRPD) in 2007, it did not ratify the convention until 2018 (NDA, 2025; United Nations, 2006). Key frameworks such as the Employment Equality Acts 1998–2015 and the Irish Human Rights and Equality Commission Act 2014 prohibit discrimination in employment and mandate reasonable accommodations (Government of Ireland 1998; Government of Ireland 2000; Government of Ireland 2014; Irish Human Rights and Equality Commission, 2020). In addition, Ireland's Autism Innovation Strategy 2024–2025 marks an important step toward more targeted inclusion (NDA, 2025). It outlines 83 actionable measures across areas including access to services, inclusion within communities, autonomy, and collaboration with neurodivergent stakeholders (NDA, 2025). However, despite extensive review of current Irish legal and policy documents, the research team found no legislation that explicitly recognises neurodiversity or mandates accommodations tailored to neurodivergent cognitive, sensory, or communicative profiles. Instead, workplace inclusion for this group relies on broader disability laws such as the Employment Equality Acts 1998–2015 and the Irish Human Rights and Equality Commission Act

2014, which prohibit discrimination and mandate 'reasonable accommodations' in general terms (Irish Statute Book, 1998; 2000). As a result, neuroinclusive practices in employment are uneven and largely dependent on employer interpretation, individual disclosure, and sector-specific leadership (OECD, 2021; Tromans et al., 2023).

Recent data suggests that neurodivergent individuals represent a significant and under-supported segment of the Irish workforce (Irish Congress of Trade Unions, 2024; OECD, 2021). A nationally representative survey conducted by Red C on behalf of the Bank of Ireland found that nearly one in ten Irish adults identify as neurodivergent: half with a formal diagnosis and half self-identified (Bank of Ireland, 2024).

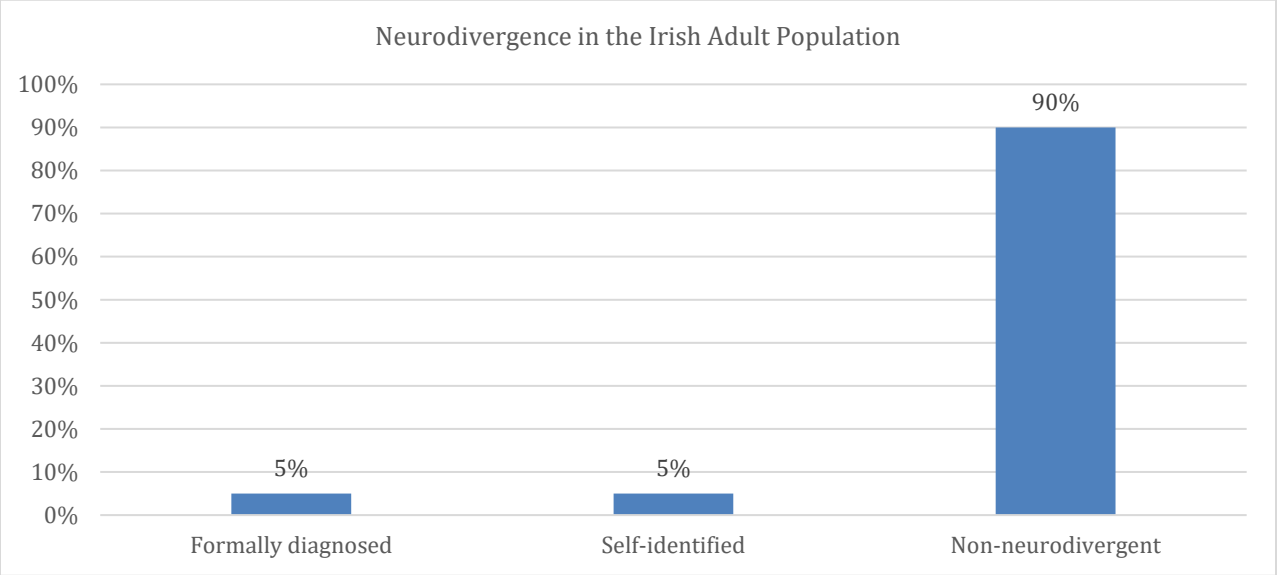

Figure 1. Prevalence of neurodivergence in the Irish adult population: 5% formally diagnosed, 5% self-identified, and 90% non-neurodivergent (Bank of Ireland, 2024).

Among those who are working, nearly half reported not disclosing their neurodivergence to their employer, and 45% said their workplace was not inclusive of neurodivergent needs (Bank of Ireland, 2024).

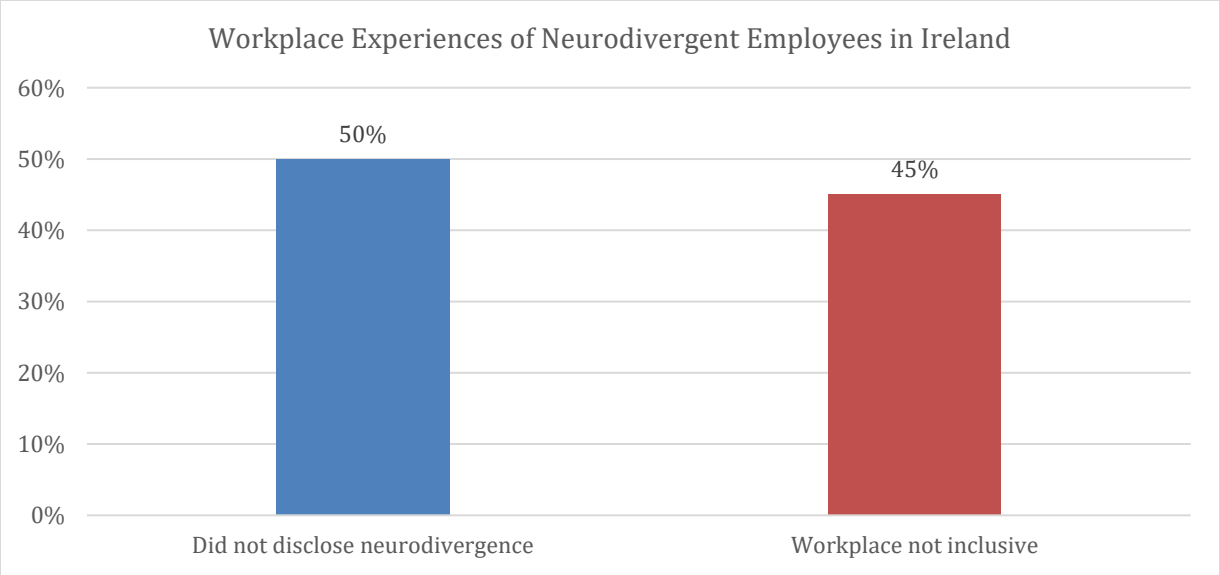

Figure 2. Workplace experiences of neurodivergent employees in Ireland, showing 50% did not disclose their neurodivergence and 45% reported non-inclusive workplaces (Bank of Ireland, 2024).

According to a report by IrishJobs and AsIAm, Ireland's national autism charity, 85% of autistic people in Ireland face unemployment or underemployment (AsIAM, 2023).

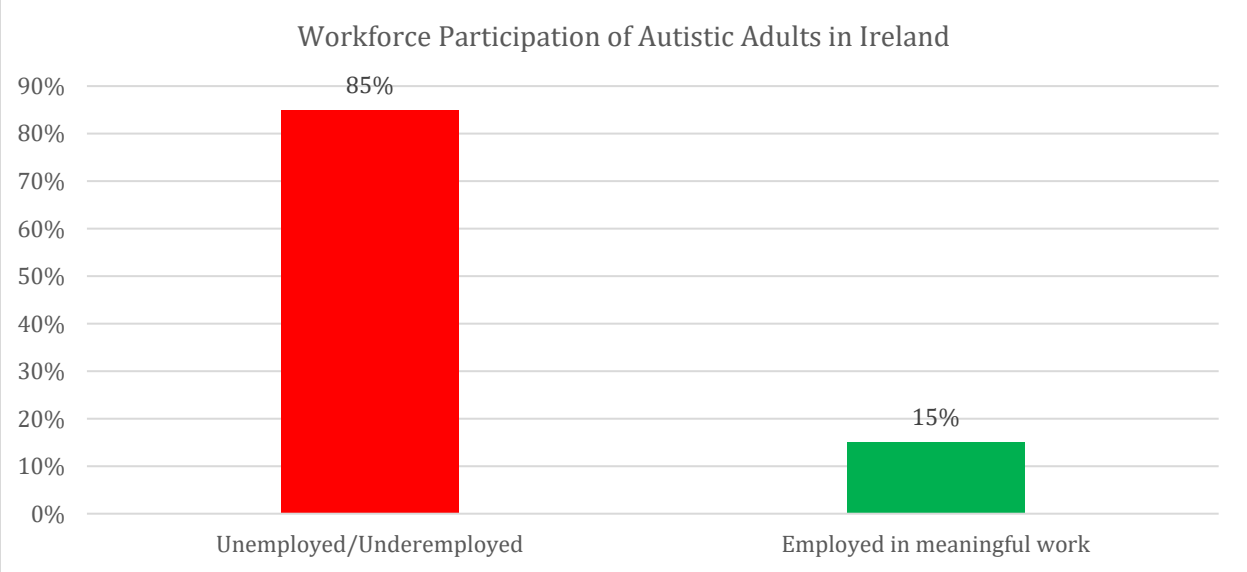

Figure 3. Employment outcomes of autistic people in Ireland, with 85% unemployed or underemployed (AsIAm, 2023). This statistic not only reflects the systemic barriers faced by neurodivergent individuals in accessing and retaining employment but also points to a broader societal issue, one that contributes to financial hardship, social exclusion, and diminished autonomy for autistic adults (Day et al., 2024). From an economic perspective, this also represents a significant loss of talent for employers and society at large (Day et al., 2024).

Employer awareness of neurodivergence in Ireland remains inconsistent, with many organisations lacking comprehensive diversity and inclusion strategies that fully address the needs of employees with disabilities (AHEAD, 2023). Evidence from the National Disability Authority shows that autism, often described as a 'hidden disability,' is poorly understood by managers and HR professionals, creating barriers in recruitment, onboarding, and workplace supports (NDA, 2025). A national review further indicates that reasonable accommodations are frequently provided in an ad hoc manner, without systematic follow-up or formalised policies (NDA, 2025). Survey data from the Irish Congress of Trade Unions highlights that while around 60% of autistic employees report needing workplace accommodations, fewer than 20% receive them during recruitment, and many avoid disclosure due to fear of discrimination (Irish Congress of Trade Unions, 2024). These gaps are reinforced by research on ADHD in Ireland, which finds that service limitations and low employer awareness contribute to uneven workplace supports and hinder long-term inclusion (Raaj et al., 2023).

Generational perspectives on neurodiversity

Understanding generational cohorts is essential when examining social advocacy trends, identity formation, and workplace expectations especially in the context of neurodiversity (Pew Research Center, 2015). Generational definitions are not based solely on age but are shaped by shared historical experiences, technological shifts, and socio-economic conditions that influence collective identity (Dimock, 2019; McKinsey & Company, 2024; Pew Research Center, 2015). To situate these differences, Table 1 summarises the defining characteristics, formative experiences, and workplace expectations of Generation X, Millennials, and Generation Z.

Table 1. Generational Cohort Characteristics

Generation	Years of birth	Formative experiences	Key traits
Generation X	1965–1980 (Dimock, 2019; Pew Research Center, 2015)	Economic uncertainty, end of Cold War, rise of personal computing (Dimock, 2019; Pew Research Center, 2015)	Independent, adaptable, sceptical of authority, pragmatic (Francis & Hoefel, 2018; Johns Hopkins Imagine, 2022)
Millennials (aka Gen Y)	1981–1996 (Dimock, 2019; Pew Research Center, 2015; The Center for Generational Kinetics, 2025)	9/11 attacks, 2008 global financial crisis, rise of internet/social media (Dimock, 2019; Johns Hopkins Imagine, 2022; Pew Research Center, 2015)	Digitally adaptable, value-driven, politically sceptical (Francis & Hoefel, 2018; McKinsey & Company, 2023)

Generation Z	1997 onward (Dimock, 2019; McKinsey & Company, 2023; The Center for Generational Kinetics, 2025)	Smartphones, climate crisis, COVID-19, social justice movements (Francis & Hoefel, 2018; Johns Hopkins Imagine, 2022)	Diverse, digitally fluent, identity-fluid, authenticity-focused (Johns Hopkins Imagine, 2022; McKinsey & Company, 2023; Pew Research Center, 2015)

Generational differences in diagnosis, identity, and advocacy are increasingly recognised as shaping workplace experiences (Abdelnour et al., 2022; Hutson & Hutson, 2023; McDonald, 2020). Diagnosis of ADHD and ASD has increased markedly in recent decades, reflecting both improved awareness and evolving criteria (Arvidsson et al., 2025; Dufault et al., 2023; Grosvenor et al., 2024). Millennials often encountered limited recognition in childhood and adolescence, leading to delayed or self-diagnosis in adulthood and retrospective reinterpretation of earlier struggles (Friedman et al., 2024; McDonald, 2020). Generation Z, by contrast, has benefited from broader diagnostic frameworks and cultural visibility, resulting in earlier diagnoses, stronger identification with neurodivergent identities, and greater openness in the workplace (Leifler et al., 2022; Martin, 2024; Russell et al., 2015). Generation X professionals frequently experienced decades of work without recognition, often receiving diagnoses only in midlife, which shaped cautious disclosure strategies and reliance on coping mechanisms (Doyle, 2020; Hutson & Hutson, 2023).

These generational cohorts also differ in advocacy styles (Deloitte, 2025; Francis & Hoefel, 2018; Hutson & Hutson, 2023; Teoh & Kinman, 2017). Generation X professionals often emphasise adaptation and self-reliance, Millennials engage in cautious advocacy within formal systems, and Generation Z tends toward openness, authenticity, and collective approaches to inclusion (Deloitte, 2025; Hutson & Hutson, 2023; Teoh & Kinman, 2017). These patterns reflect broader generational shifts in workplace values, from individual pragmatism to digital activism and systemic reform (Francis & Hoefel, 2018; Johns Hopkins Imagine, 2022). Understanding neurodivergence through a generational lens therefore adds a critical interpretive dimension, highlighting how historical context shapes workplace identity, disclosure, and expectations of inclusion (Abdelnour et al., 2022; McDonald, 2020).

Methodology

Research aim and design

The aim of this study was to explore how professionals with ADHD and/or ASD in Ireland navigate workplace dynamics, career development, identity, and well-being and how generational context shapes these experiences. To capture the nuance of

lived accounts, the study employed a qualitative design situated within an interpretivist paradigm, which assumes that reality is socially constructed and best understood through participants' perspectives (Creswell & Poth, 2018; Denzin & Lincoln, 2017; Schwandt, 2015). A phenomenological orientation informed the design, with its emphasis placed on how individuals experience and interpret their everyday realities (Smith et al., 2009; van Manen, 2018).

Semi-structured interviews were selected as the primary method of data collection because they allow participants to articulate experiences in their own words while ensuring coverage of core topics such as disclosure, workplace supports, and career trajectories (Maguire & Delahunt, 2017; Patton, 2014). The study was approved by the Dublin Business School Research Ethics Committee.

Participants and sampling

Ten professionals participated in the study, comprising six women and four men aged from 22 to 57. Participants represented Generation X, Millennials, and Generation Z, enabling intergenerational comparison. All had received a formal diagnosis of ASD, ADHD, or a co-occurring profile such as AuDHD, with several also reporting co-occurring conditions including dyslexia, generalised anxiety disorder (GAD), and obsessive-compulsive disorder (OCD). Such diversity reflects the high rates of co-occurrence reported in neurodivergent populations (Casanova et al., 2020).

Purposive sampling was used to identify individuals with direct experience of navigating the workplace as neurodivergent professionals (Palinkas et al., 2015). This strategy ensured alignment with research aims while allowing for diversity in age, gender, and occupational background. The final dataset reached thematic saturation, with no new substantive themes emerging from additional interviews (Guest et al., 2006).

Table 2. Participant demographics

Participant	Age	Diagnosis	Generation
P1	57	Autism, ADHD, GAD	Gen X
P2	41	ADHD	Millennial
P3	33	AuDHD, OCD	Millennial
P4	42	ADD	Millennial
P5	35	Autistic	Millennial
P6	55	ADHD	Gen X
P7	33	AuDHD	Millennial
P8	22	ASD	Gen Z

P9	30	ADHD (diagnosed before dual diagnoses were recognised)	Millennial
P10	36	ADHD, Dyslexia	Millennial

Recruitment

Participants were recruited primarily through professional and personal networks of the research team, followed by snowball sampling in which initial respondents recommended others with similar profiles (Johnson, 2014). This approach was effective for reaching a number of participants that may otherwise be reluctant to publicly disclose their diagnoses. Recruitment materials included an information sheet outlining the study's aims, voluntary participation, and confidentiality safeguards. Written informed consent was obtained prior to interviews, and participants were reminded of their right to withdraw at any stage.

Data collection

Interviews were conducted online via Microsoft Teams between July and August 2025. Participants were offered flexibility in mode (video, phone, or email), but all chose video with cameras on. Interviews lasted between 35 and 70 minutes, depending on availability and depth of discussion. All were audio-recorded with consent and transcribed.

The semi-structured format balanced comparability across participants with flexibility to follow individual narratives. Core prompts explored educational and employment experiences, disclosure practices, workplace supports, and coping strategies. Participants were also asked about generational influences, such as family expectations, cultural attitudes, or diagnostic timing.

Data analysis

Interview data were analysed using thematic analysis, a flexible yet systematic approach for identifying and interpreting patterns across qualitative datasets (Maguire & Delahunt, 2017). All interviews were transcribed, with pseudonyms replacing participant names to protect confidentiality. The analytic process followed Braun and Clarke's (2006) six-phase framework: 1) familiarisation with the data; 2) generating initial codes; 3) searching for themes; 4) reviewing themes; 5) defining and naming themes; and 6) producing the report. Naeem and Ozuem's (2022) model, which draws heavily from Braun and Clarke's reflexive thematic analysis but proposes a conceptual model, was also used to analyse the data in this study. This model offers a more visual interpretation, condensing a large amount of data into a clear chart that demonstrates relationships between quotations and themes.

Familiarisation involved repeated reading of the transcripts to capture both explicit and latent meanings. Initial coding was conducted line by line, generating descriptive codes that highlighted significant features of the data, such as disclosure practices,

career barriers, strengths, and coping mechanisms. These codes were then organised into themes, which represented patterned responses across participants. Themes were subsequently refined into higher-order concepts, which provided an interpretive lens for understanding how individual experiences connected to broader generational and cultural contexts.

The analytic process was informed by Naeem and Ozuem's (2022) conceptual approach, emphasising iterative movement between data, codes, themes, and higher-order interpretation. This structure was adapted into a visual diagram to illustrate the analytic pathway in this study, showing how raw data were systematically transformed from codes to themes to concepts. The diagram also demonstrated the recursive nature of the process, as the research team moved back and forth between transcripts, coding tables, and emerging interpretations to ensure analytic depth and rigor.

The final analysis produced five concepts, each representing a higher-order cluster of themes:

1. Identity and self-presentation: Strategies of disclosure, masking, and authenticity in negotiating workplace identity.
2. Workplace dynamics and inclusion: Organisational cultures, practices, and supports that shaped belonging or exclusion.
3. Career and development: Trajectories of progression, barriers, and redefinitions of success.
4. Well-being and coping: Burnout, emotional regulation, and support networks.
5. Generational context (interpretive lens): Cultural and historical factors shaping diagnosis, education, and workplace expectations.

These concepts captured both commonalities across participants and intergenerational contrasts, such as differences in disclosure practices between Baby Boomers, Generation X, Millennials, and Generation Z. For example, while older participants often described stigma and limited diagnostic recognition in earlier decades, younger participants spoke of increased awareness but continued difficulties navigating disclosure and inclusion. This analytic approach enabled the research team to move beyond descriptive accounts of individual participants and to identify patterned meanings that addressed the research questions, while preserving the richness of lived experiences and ensuring that participants' voices remained central to the findings.

Reflexivity and trustworthiness

Both authors identify as neurodivergent which shaped the research process. While neither was interviewed, their lived experience informed the design of interview questions and interpretation of findings. Reflexivity was maintained by documenting assumptions, engaging in iterative discussions, and grounding coding in participants' narratives rather than personal experience (Tracy, 2010).

Several strategies were employed to ensure trustworthiness. Credibility was enhanced through verbatim transcription and iterative coding (Nowell et al., 2017). Transferability was supported by providing thick description of participant

demographics and contexts (Patton, 2014). Dependability was addressed through systematic documentation of analytic decisions, and confirmability was strengthened through peer debriefing between authors (Lincoln & Guba, 1985).

Ethical considerations

The study was conducted with the approval of the Dublin Business School Ethics Committee and followed the established guidelines for qualitative research ethics. Participants received detailed information sheets and gave written consent prior to participation. To protect anonymity, pseudonyms were assigned and identifying details were removed during transcription. Audio files and transcripts were stored securely on password-protected devices accessible only to the research team. Given the sensitivity of discussing diagnoses and workplace challenges, interviews were conducted in a supportive manner with open-ended prompts and explicit reminders of participants' right to withdraw.

Thematic Analysis and Findings

Introduction

The thematic analysis sought to capture the lived workplace experiences of neurodivergent professionals across three generational cohorts. Drawing on Braun and Clarke's (2006, 2019) framework, we conducted iterative coding, categorisation, and synthesis to move from participant statements to broader conceptual clusters. This process yielded five interrelated domains: 1) identity and self-presentation, 2) workplace dynamics and inclusion, 3) career and development, 4) well-being and coping, and 5) generational context. These domains capture how neurodivergent professionals navigate professional life in Ireland, while generational context functions as an interpretive lens shaping identity, and disclosure and expectations of inclusion. Each domain is outlined below with illustrative quotations.

Overview of themes

The thematic analysis produced 17 themes, which were subsequently clustered into four higher-order concepts and one interpretive lens. Table 2 provides an overview of these, including a representative statement from participants and the conceptual domain each theme was assigned to.

The statements included here are illustrative rather than exhaustive, selected to capture the essence of each theme in a concise way. A more detailed account, with multiple statements and extended analysis, is provided in the following sub-section.

Table 3. Overview of themes clustered into four higher-order domains, with generational context as an interpretive lens

Statements	Keywords	Codes	Themes	Concepts

'I'm pretty open about [my diagnosis] at work…. And I said I want you to understand that sometimes if I talk too fast and I momentarily get frustrated or have a brief emotional moment, here is why.' (P4)	Openness, disclosure, transparency, authenticity, explaining behaviours	Radical openness and authenticity	Disclosure and identity	Identity and self-presentation
'I [always] felt comfortable in the back office. I'm struggling a little bit with the client-facing stuff, but I have to have more of a mask… I feel a little bit more that I'm trying to mask my real self.' (P6)	Back office, client-facing, mask, real self	Masking vs. authenticity	Masking and social navigation	
'If you can't bring your true self and all of your true self to work, then it's not the right company.' (P4)	True self, culture fit, leave/move if misfit	Authenticity and person–organisation fit	Advice to ND Employees	
'I've disclosed it to colleagues I'm comfortable with. I haven't to managers. I brought it up once in a meeting asking for help, very much begging for help, and was passed over. No help was given, and at that point I said I wasn't going to do it again.' (P9)	Disclosure, colleagues, managers, help denied	Unsupportive leadership	Workplace inclusion and exclusion	Workplace dynamics and inclusion
'I wear earplugs… I have a jam card… If something gets too much [in a meeting] I can leave... have a mentor I requested… I also have a jam card… I can leave if meetings overwhelm me.' (P8)	Earplugs, jam card, mentor, meetings, overwhelm, leaving	Granted accommodations and tools	Workplace accommodations	
'All the advice you give to managers goes against how they're taught… see people as people not numbers… not everyone's a cookie cutter… there's more to your employees than a performance review.' (P9)	Managers, cookie cutter, numbers	Shift from traditional to human-centred management	Managerial awareness and adaptation	
'I don't want to be a statistic for someone, I don't want to be a tick the box… I never wanted to get something because of that, or not get something because of it either.'(P3)	Tokenism, quotas, fairness, stigma	Fairness and systemic justice	Justice orientation and advocacy	
'[The manager] was very receptive towards education, very receptive towards what I was doing… basically said to me, look, I will help you, I will facilitate you as best I can, because the knowledge that you're gaining can be used.' (P1)	Manager support, education, facilitation, encouragement	Managerial support and flexibility	Workplace support	

'I do like it. I like its completely controlled environment... everything is ruled by standards… whatever rules and manuals.' (P5)	Structure, predictability	Environmental fit and supportive conditions	Career and environmental fit	Career and development
'By luck or by chance, I ended up in a career that was perfect for my profile… I finally found a place that I'm comfortable in.' (P6)	Career fit, comfort, belonging, stability	Career fit and personal alignment	Career satisfaction	
'I never thought I could learn… now I know that's not true, I just couldn't learn in an exam format… with a one-to-one [language] tutor I did really well.' (P8)	Couldn't learn, exams, one-to-one tutor, success	Traditional academics as barrier	Educational experiences	
'I actually think that being successful in a job is about being happy and having a work life balance...being able to perform at your peak and being able to be recognized for it and to be able to succeed, 'cause I think a lot of people with neurodivergence especially have talent that they're not able to unlock as easy.' (P10)	Happiness, success, balance, recognition, talent, neurodivergence	Success as autonomy, happiness and balance	Redefining success and progression	
'They worked me to the bone. I was probably quite burned out… I was doing about ten people's jobs for a good nine months and because of the ADHD ability to just do things under pressure, I was doing a pretty good job.' (P7)	Overwork, burnout	Chronic burnout and constant stress	Burnout and well-being	Well-being and coping
'I've got an app on my phone. You add your task today and you get check them off. It's like a little bit of dopamine hit for me, creating this sense of urgency. And the other thing for me is getting out for a walk every single day.' (P4)	Mobile app, dopamine reward, daily walks	Self-regulation mechanisms	Coping strategies and self-regulation	
"When I grew up… there was a recession… I never felt that I didn't have to look for anything else…. [It was] suggested to me was to get that secure job… get married, have the children.' (P1)	Recession, secure job, cultural expectations, marriage	Economic conditions and stability seeking	Generational context (cultural/economic)	Generational context (interpretive lens)
'Education was important in my family… it was very much expected in my family that you went and you did a degree… So I went ahead and went into college. It was kind of expected of me.' (P9)	Education, family expectation, degree	Educational expectations and pressures	Family influence	

'I AM 55. I have ADHD and I was diagnosed two years ago.' (P6)	ADHD, diagnosis	Late diagnosis	Generational pathways to diagnosis	

Thematic Narratives

Identity and self-presentation

Participants described strategies of disclosure, masking, and advice-giving that reflect the constant negotiation between authenticity, protection, and stigma. Three interrelated themes emerged: disclosure and identity, masking and social navigation, and advice to neurodivergent employees.

Disclosure

Disclosure was not a fixed act but situational. Some participants adopted minimal disclosure, presenting only strengths framed instrumentally:

> I'd rarely say I'm autistic… it makes me better at writing emails. My grammar is very good (P7).

Others embraced openness as authenticity*:*

> I disclose too much… I'm not gonna pretend I'm not who I am (P2).

Several adopted pragmatic disclosure when issues arose*:*

> I'm very comfortable telling my manager… I had to talk to them because of issues with a coworker (P5).

These examples show disclosure as a continuum shaped by workplace culture.

Masking

Masking was reported as protective but draining. One participant explained:

> Because I wasn't a bold child, I wasn't diagnosed with ADHD… I was able to kind of mask it (P10).

Others described masking as a double bind, necessary for belonging but at the cost of authenticity and delayed recognition:

> If you conform, you're copying them, and if you don't conform, you're weird (P6).

Advice to neurodivergent employees

Narratives often included advice. Some promoted strength-based approaches*:*

> Do something that gives you joy… managers can get amazing things out of that (P2).

Others stressed caution:

> Don't disclose unless… you can point to things you've achieved (P7).

A contrasting view resisted placing the burden on employees:

> People with ADHD and ASD are already doing everything they can… it's really the managers (P9).

This tension between empowerment, caution, and resistance highlights the uneven expectations placed on neurodivergent employees and the structural imbalance that persists in workplace cultures.

Table 4. Identity and self-presentation themes illustrating disclosure, masking, and authenticity strategies

Statements	Keywords	Codes	Themes
'I'd rarely say I'm autistic… it makes me better at writing emails. My grammar is very good, but apart from that, I don't think it affects my work.' (P7)	Selective mention, minimising impact, instrumental benefit	Selective/minimal disclosure	Disclosure and identity
'I disclose too much… I actually want this to become more open…. I'm not gonna pretend I'm not who I am or my kids aren't who they are' (P2)	Disclosure, openness	Radical openness and authenticity	
'I'm very comfortable telling my manager… I had to talk to them because of issues with a coworker getting in my space.' (P5)	Disclosure, comfort, manager support, coworker	Practical disclosure to managers	
'[Socially], I always had a best buddy to stick with… like a shield. I always find shields.' (P5)	Social shield, protection	Strategies around masking: shields and withdrawal	Masking and social navigation
'Because I wasn't a bold child, I wasn't diagnosed with ADHD I think I was able to kind of mask it' (P10)	Not bold, masking, undiagnosed	Masking hides symptoms, delays diagnosis	
'I had a real problem with other kids my age… It's like if you conform, you're copying [them], and if you don't conform, then you're weird.' (P6)	Peer norms, conformity, weird, double bind	Masking to meet social/peer expectations	

'Do something that gives you joy…. What if you can work with the ways you think differently? Managers can get amazing things out of that.' (P2)	Advice, joy, work differently, manager's asset	Joy and strength-based focus	Advice to ND employees
"Make sure that you disclose it because you need to give your employer the opportunity to give you what you need…. The fear would always be there, but I still think that the positive would outweigh that.' (P10)	Disclosure, fear, opportunity, employer	Encouragement of disclosure despite risks	
"Don't disclose unless/until you need to, there's a lot of bias out there whether it's conscious or unconscious. In my experience it's worked better to be able to point to things you have achieved because of your neurodivergence.' (P7)	Advice, achievements, bias, disclosure	Strategic non-disclosure and self-protection	
'We're not to be advising the employees, people who have ADHD and ASD are already doing everything they can. They're already trying hard enough. It's really the people who are judging on the other side, the managers, the superiors, those who are doing performance reviews, et cetera. That's that's a lot.' (P9)	Advice to employees, unfair expectations	Rejecting burden on ND employees	

Workplace dynamics and inclusion

This concept explores how organisational cultures, practices, and managerial approaches shaped whether participants experienced inclusion or exclusion. Narratives highlighted both enabling and exclusionary dynamics across four themes: workplace inclusion and exclusion, workplace accommodations, workplace support, justice orientation and advocacy, and managerial awareness and adaptation.

Accommodations

Access to supports often required self-advocacy. For some, disclosure enabled adjustments:

> I have a clinical need to move around and sit different ways all day… they then can't argue, and they're like, we understand (P7).

Others reported systemic gaps:

> There are no employee support programs… not in my old job and not in my new job (P10).

In inclusive cultures, accommodations were normalised:

> If it makes you more understanding… then I'm all for it (P1).

Managerial support

The role of managers was pivotal in shaping whether support was absent, perfunctory, or transformative. Some participants described dismissal and inaction:

> I told my manager… she was like, I'm not their manager. There's nothing I can do (P5).

Others experienced deep loyalty to managers who demonstrated empathy and flexibility:

> When I told her about ADHD she goes, I knew that all along… you've still got superpowers… I followed her to her company (P10).

Managerial support was also expressed through small but meaningful adaptations:

> My manager is very good because she did a small training course on disability… just being supportive. She didn't know at the start and that was the problem (P8).

Justice orientation and advocacy

Participants often grounded their views of inclusion in wider commitments to fairness, justice, and equity. Strongly rejecting tokenism and discrimination, they emphasised values-based inclusion:

> I've no time for discrimination, I've no time for narrow-mindedness, I've no time for racism, I have no time for bigotry (P1).

> I'd like to have a positive impact… make the workplace more inclusive (P8).

Managerial awareness and adaptation

Many participants offered advice directed at managers, highlighting the importance of awareness, empathy, and tailored approaches. They urged managers to see beyond numbers and stereotypes:

> Managers [should]… try to understand where that person is coming from, no matter how 'crazy' it might seem… give them the benefit of the doubt (P4).

> Don't be afraid to offer them a bit of micromanagement if they need it… it's scaffolding: regular checks, deadlines (P6).

> Managers [should], just get to know the person who is working for you, because if you know one autistic person, you know one autistic person (P5).

The workplace dynamics and inclusion conceptual cluster illustrates how organisational structures and managerial practices create divergent realities for neurodivergent employees. For some, workplaces were exclusionary and unresponsive, with cultural blind spots and unsupported disclosure. For others, accommodations and supportive managers fostered environments where they could thrive. Across accounts, participants consistently stressed that inclusion requires

more than policies – it depends on cultures of fairness, managerial empathy, and everyday practices that recognise and celebrate individual strengths.

Table 5. Workplace dynamics and inclusion themes: Illustrative quotes on accommodations, managerial support, justice orientation, and cultural fit

Statements	Keywords	Codes	Themes
'My workplace did an employee experience survey… I was the only one who thought that some people's "true selves" aren't pleasant or appropriate… The other three people [managers] said they "never would have made that connection" and they "can't even imagine how I think."' (P7)	Leadership blind spots, inclusion boundaries, culture risk	Cultural exclusion	Workplace inclusion and exclusion
'I arrested five people in one year. And the manager said to me, I think you need to do better. So I arrested four the next year. And I said to him, "you didn't say whether more or less arrests were better or not." What about the crime we are preventing, how is that measured?" (P1)	Metrics, misunderstanding, and prevention	Misaligned performance evaluation	
'They've sent around emails to say they're encouraging us to disclose if we're neuro divergent and they're trying to up the diversity and up the awareness and everything' (P10)	Disclosure, diversity, policy	Disclosure and accommodation gaps	
'I don't know network very well. So I only meet with my superiors when I have to and don't tend to actually try and, you know, bolster a relationship there at all.' (P9)	Networking, limited relationships	Difficulty accessing informal networks	
'I have [disclosed to colleagues]. I think I only officially did it with health and safety when they started	Ergonomics, movement need,	Access via disclosure	Workplace accommodations

bothering me about my chair… I have a clinical need to move around and sit different ways all day… I need to be able to move around because of my disability… And they're like, we understand.' (P7)	self-advocacy, policy challenge		
'There are no available employee support program or a coach or anything not in my old job and not in my new job.' (P10)	Employee support program, coach, absence, lack of resources	Systemic support gaps	
'I would say the culture in the present workplace that I am in is hugely supportive, and why not? if we can make allowances for anybody… if it doesn't impact your workload, in fact, if it makes you more understanding… then I'm all for it.' (P1)	Culture, wheelchair ramps, allowances, supportive, inclusion	Cultural support for accommodations	
'My manager is very good because she did a small training course on disability… just being supportive… she didn't know at the start and that was the problem.' (P8)	Manager, training, support, and disability awareness	Training managers build capacity	Managerial awareness and adaptation
'[Managers should remember] everybody comes from, a different walk of life with a different perspective and they're going to have different experiences and to try and understand where that person is coming from, no matter how batshit crazy it might seem to be, you know, so to really give them the benefit of the doubt' (P4)	managers, empathy, see other's perspective, benefit of doubt	Inclusive acceptance and empathy	

'[To managers], don't be afraid to offer them a bit of micromanagement if they need it. It's always seen as a bad thing, but sometimes it could be more supportive, I think. It's scaffolding: regular checks, insurance. It's much easier to focus your mind on something if you know that you've got to talk to someone about it at three pm or nine tomorrow morning or whatever. It's giving people clear deadlines.' (P6)	Micromanagement, scaffolding, check-ins, deadlines	Structured support and scaffolding	
'I had a manager, who was very supportive. I worked with her for about eight years. When I told her about my diagnosis of ADHD, she goes, "I knew that all along... well, you've still got superpowers." I followed her to her company after she left a year later. I'm now working with her again because I feel and want to work for an individual that really sees who I am and celebrates it.' (P10)	Manager, supportive, superpowers, followed	Supportive manager validates identity and builds loyalty	
'Managers [should], just get to know the person who is working for you, because if you know one autistic person, you know one autistic person… Get to know, uh, what will… make them feel okay.' (P5)	Managers, individuality, getting to know a person	Individualised understanding and tailored support	

'I've not time for discrimination, I've no time for narrow-mindedness, I've no time for racism, I have no time for bigotry.' (P1)	Anti-discrimination, anti-racism, strong values	Fairness and systemic justice	Justice orientation and advocacy
'I'd like to have a positive impact… make the workplace more inclusive.' (P8)	Mentor, advocate, inclusion, positive impact	Equity and inclusion in the workplace	
'I started going to big demonstrations when I was 15, peace and technically campaigning and stuff… anti- nuclear group…. The last demos I went to was when I was when I lived in London as a student, probably anti-criminal justice bill.' (P2)	Demonstrations, campaigning	Activism action	
'My manager is very good at accommodating for me.' (P8)	Manager, accommodation, understanding, support	Managerial support and flexibility	Workplace support
'I haven't had negative experiences, nobody judged.' (P6)	Disclosure, acceptance, culture, non-judgement	Cultural support and openness	
'I told my manager… she was like, "listen, I'm not their manager. There's nothing I can do about that."' (P5)	Manager, lack of action, conflict, boundary	Lack of managerial support (negative)	
'Having a work-life balance… being recognised for it… a lot of people with neurodivergency especially have talent that they're not able to unlock as easy.' (P10)	Happiness, recognition, neurodivergent talent	Recognition and value of talent	

Career and development

This concept explores how neurodivergent professionals experience career pathways, environmental fit, and evolving definitions of success. Narratives reveal both structural barriers and enabling conditions across three clusters: career and environmental fit, educational experiences, and redefining success and progression.

Career and environmental fit

Misalignment between individual needs and workplace structures often prompted job changes:

> Most employments… value the timely person who can do the same task day in and day out… for me, it's only interesting as long as it's novel (P9).

Others described drift between roles:

> First job was [in a] call centre… then heating oil… then fund accounting (P7).

Yet when environments matched strengths, satisfaction was evident:

> When I first landed in this job… I like working with the team… it's a good job for me (P6).

Educational experiences

Schooling was a recurring reference point, shaping self-concept and early career pathways. Several recalled pressure and lack of support:

> There was no support at school… I only got diagnosed at end of fifth year (P8).

Others internalised inadequacy:

> Everyone else gets it and then there was me who had to read it over and over… I felt pretty stupid (P4).

Yet isolated supportive teachers had lasting impact:

> There was a teacher that understood my learning style… my attendance record was perfect that year (P10).

Redefining success and progression

Success, for participants, was not defined narrowly as career advancement but reframed in diverse and often personal terms. Participants challenged conventional metrics, framing success as balance, contribution, and recognition.

> Success… being comfortable, and having time with family and social time too (P5).

Others stressed meaningful impact:

> I'd love to move into mental health and make a positive impact (P2).

The career and development conceptual cluster reveals both systemic barriers and individual adaptations in navigating professional life. Participants described mismatches between their needs and rigid workplace expectations, but also highlighted the conditions under which they could thrive: flexible environments, supportive managers, and roles that leveraged their strengths. Education was remembered as both a site of exclusion and a formative context, with lasting impacts on confidence and career trajectories. Ultimately, participants challenged traditional definitions of success, reframing achievement in terms of balance, meaning, and recognition of their distinctive contributions.

Table 6. Career and development themes illustrative of career fit, educational experiences, and redefinitions of success

Statements	Keywords	Codes	Themes
'In my [customer-facing role] I would freeze up because of the noise… I didn't really know how to do customer service… now I know I should probably have a script.' (P8)	Sensory overwhelm, freezing, lack of strategy	Environmental misfit and sensory or structural barriers	Career and environmental fit
'I don't tend to get along well in places because [in] most employments, they value the timely person who is able to do the same task day in and day out with a big smile on their face… whereas for me, it's only interesting as long as it's novel. So the first little while will be interesting and then it's boring…. I don't tend to stay in places long…. I leave because I get bored… and then I'm like maybe this would be better every time.' (P9)	Repetition, boredom, novelty, instability	Need for novelty vs. job instability	
'I just didn't have a clear vision or direction…. First job, well, there was the part time work…. I worked in a call centre… after that… selling home heating oil… then moved on to working in fund accounting and finance…. I work as an analyst.' (P7)	Wandering career, trial and error	Unclear direction and career drift	
'[I switched jobs because] I've been in the same company a long time, wanted something	Need for change, family needs, bullying	Family and external pressures on career path	

different… really wanted to be there for my son. I feel like he really needed me… I felt very much like I was being bullied by my line manager… made an official complaint.' (P10)			
'When I first landed in this [current] job, I thought, "yeah, this is the job that I've wanted to have…." Now I'm here. I'm kind of thinking, I like working with the team…. [This job] is a good job for me.' (P6)	Comfort, team role	Environmental fit and supportive conditions	
'Our deadlines are more by the day or by the week rather than throughout the day. So if I don't feel like I can work in the morning, I can't just do nothing all day and I can come back to it in the evening if I'm feeling better then so it's easier to manage.' (P7)	Flexible scheduling, autonomy		
'Took the full-time job in the other place because they are paying for my degree.' (P3)	Full-time job, financial support, education funding, career move, opportunity-driven	Financial security and stability	Career satisfaction
'It is a better working environment…. I have like a millennial manager… he believes if you're not engaged, take a walk or break…. So it's	Supportive manager, breaks, less burnout	Supportive work environment and leadership	

much less of a chance to get burned out… working in a place with good colleagues and a good manager. That's the biggest thing… those things can ruin your life outside of work.' (P7)			
'I'm at my best when there's a problem no one can solve.' (P2)	Problem solving, strengths	Growth, challenge and stimulation	
'I just like organising things and bringing people together and making people happy and you know, I can thrive on that stressful environment.' (P4)	Organising, bringing people together, thriving, stressful environment	Meaningful relationships and recognition	
'I didn't enjoy school… I still see it as very pressured, in need of a radical overhaul.' (P1)	School, pressure	School as a pressured system	Educational experiences
'[School] reports on my emotional regulation wouldn't have been great… there would have been fighting going on in the yard and stuff like that.' (P2)	Primary school, emotional regulation	Behavioural struggles in school	
'In school I would never speak, I was so focused on what I was doing [at a given time]…. I was strongly encouraged to attend a special school.' (P3)	School, silent, hyper focused, special school recommendation	Misinterpretation of ND traits	
'I kind of enjoyed [school]. I enjoyed playing sports, music…. I didn't enjoy things academically, I felt… everyone else gets it and then there was me who had to read it over and	School, academics, effort, feeling stupid	Internalised inadequacy	

over and over again… I felt pretty stupid.' (P4)			
'I looked back over them [academic performances]… I had a lot of intelligence. If only I'd apply myself, if only I'd stop daydreaming… when he's in the classroom, he's, you know, he's able to apply himself in certain subjects, and if the subject didn't interest me, sure, it was a waste of time me being there.' (P10)	Intelligence, daydreaming, interest, wasted time	Traditional academics as barrier	
'I really hated studying and hated exams, it was too much pressure… I changed school… I didn't really make a lot of friends.' (P8)	Hated exams, pressure, school transfer, no friends	Exam stress and social challenges	
'There was no support at school… I only got diagnosed at end of fifth year… their approach was "you have accommodations now, what else could you want?"' (P8)	No support, late diagnosis, limited accommodations	Systemic lack of support	
'There was parts of school I loved… I had a teacher that I gelled with… she just kind of understood my learning style and I got on very well in that class…. [E]ven my attendance record was perfect that year…. But then kind of later on in secondary school there was challenges.' (P10)	Teacher, learning style, attendance, challenges	Positive alternative experience (supportive teacher) contrasted with systemic challenges	

'I consider myself empathetic… facial expressions… it is being probably the biggest kind of superpower.' (P4)	Empathy, strengths, superpower, identity	Strengths-based success (superpowers)	Redefining success and progression
'Ultimately I would love to move into the service, particularly mental health, and try and like make a difference in there… because I'd love to be able to make a positive impact.' (P2)	Positive impact, mental health, meaning	Success as meaningful contribution	
'The dream… [is] be promoted to a more senior role… [and] save up for a down payment on an apartment.' (P8)	Promotion, career advancement, housing, savings, goals	Success as progression and achievement	
'This job is a little bit less or a little bit more or is it interesting enough to keep me going?' (P9)	Change, interest, variety, engagement	Success as ongoing interest and stimulation	
'Success for me, looking in five years' time, would be… progressing… not just position-wise, but salary-wise… being comfortable, and having time with family and social time too.' (P5)	Progression, salary, comfort, family time, social life, balance	Success as autonomy, happiness and balance	

Well-being and coping

This conceptual cluster explores how participants experienced the strain of neurodivergence in professional contexts, alongside the coping strategies they developed to manage stress, emotions, and energy. Narratives highlight two interconnected themes: burnout and well-being; and coping strategies and self-regulation.

Burnout and well-being

Burnout emerged as a recurring experience, and was described not only as exhaustion but as a cumulative outcome of intense focus, overcommitment, and cognitive overload.

> I get burnout for sure… the constant flow of thoughts… empathetic burnout in a leadership capacity (P4).

Others described inefficiency from overload:

> I waste hours because if there's a small distraction, I have to restart… doing the same thing two or three times (P10).

Coping strategies and self-regulation

Coping strategies ranged from relational supports to creative outlets. One participant noted:

> My spouse has been fantastic… it's nice when you have a support network that believes in you (P10).

Others moderated compulsions for social acceptability:

> I learned when you're walking with your friends, you cannot count your steps and say we need to go back here (P3).

Creative practices such as knitting were described as therapeutic:

> I find knitting really, really therapeutic… I get to count my stitches (P3).

These examples show both resilience and the costs of maintaining equilibrium.

Table 7. Well-being and coping themes illustrating burnout, emotional regulation, and coping strategies

Statements	Keywords	Codes	Themes
'[I get] burnout for sure. And because you care so, so, so intensely about what you're doing… I'm almost interrupting myself constantly because of the constant flow of thoughts…. And that's exhausting... empathetic burnout and in a leadership capacity.' (P4)	Over-caring, nonstop thoughts, and leadership burnout	Chronic burnout / constant stress	Burnout and well-being
'The amount of hours that I waste in a … day, in a week, in a month because I'm trying to do something that should take me, say, 20 minutes. And if there's a small little distraction or something happens, suddenly I have to restart and then I might be five minutes back or doing the same thing two, maybe three times.' (P10)	Time loss, inefficiency	Cognitive/task overload	
'[S]ometimes I'd say nothing and just bury things that would really annoy me and	Suppressed emotions,	Emotional regulation strain	

then they would build and I would have these explosive reactions.'(P4)	explosive reactions		
'The right people at the right place at the right time have kind of encouraged me, a lot of self-motivation too…. [My spouse has] been fantastic at being able to support me… given me a lot of courage… it's nice when you do have a support network around you that does believe in you.' (P10)	Support network, spouse, encouragement, confidence	Support systems and professional help	Coping strategies and self-regulation
'[I'm] still do the one with the cup and stuff, but I learned… when you're walking with your friends you cannot count your steps and be like, guys, we need to go back here.' (P3)	Step-counting, learned moderation, social adaptation	Compulsive/maladaptive coping	
'I find knitting really, really therapeutic, because then I can listen to a podcast… I get to count my stitches.' (P3)	Knitting, therapy, distraction	Adaptive coping practices	

Generational context

This conceptual cluster highlights how broader cultural, economic, and familial conditions shaped the trajectories of neurodivergent professionals. Unlike the other clusters, which focus on workplace experiences, generational context operates as an interpretive lens that situates individual narratives within wider historical and social structures. Three intersecting themes emerged: generational pathways to diagnosis, cultural and economic influences on work, and family influence.

Generational pathways to diagnosis

Experiences of diagnosis were deeply shaped by generational timing, cultural stigma, and evolving medical frameworks. For many participants, diagnoses occurred only in adulthood, long after symptoms first emerged:

> I'm 35… It was [diagnosed] February of last year (P5).
>
> I am 41… I only got diagnosed officially in May of this year (P2).
>
> [I was] 29 when got diagnosed (P10).

Delays were often tied to stigma or systemic barriers:

> At the time… it wasn't as socially acceptable. And so if you were getting a diagnosis, there was something wrong, you know (P9).

> Diagnosed at 28… public system refused dual diagnosis… said one can make the other appear on the test (P9).

Others described shifts in diagnostic categories that redefined their identities:

> I was initially diagnosed with Asperger's when I was nine… and they changed it to autism because it was removed from the DSM [Diagnostic and Statistical Manual of Mental Disorders] when I was 27 (P3).

Cultural and economic influences on work

Economic conditions and cultural expectations strongly shaped participants' early career choices. Recessions, labour market instability, and cultural norms of stability influenced not only entry points in working life but also long-term priorities:

> After 2008 was pretty tough being an engineer… not great, but we still had our house. A couple of years we couldn't afford Christmas or big holidays (P7).

> I grew up in the '90s… born and raised [abroad]. The public jobs are pretty good for [job function], and I had a few friends already on the job, so that led me to it (P5).

Family influence

Family expectations and support further mediated participants' educational and career pathways. For some, parents emphasised education to achieve opportunities they themselves had been denied:

> My parents… school was very important to them. The main reason why it was so important… they didn't have the opportunity to go to college (P5).

Others experienced direct guidance into careers through family connections:

> My uncle worked in the bank so my mam said I was to go work in the bank… they paid for college and gave study leave (P2).

Yet not all experiences were pressure-driven; in some cases, parents encouraged exploration without demanding persistence:

> My parents wanted me to try college to see if it suited me, but there was no pressure to stay (P8).

Table 8. Generational context themes including diagnostic pathways, cultural/economic influences, and family expectations

Statements	Keywords	Codes	Themes
'I grew up in the 90s… born and raised [abroad]. The public jobs are pretty good for [job function], and I had a few friends already on the job, so that led me to it.' (P5)	1990s, public jobs, social networks, international	Cultural and social pathways to work	Generational context (cultural/economic)
'After 2008, [it] was pretty tough being an engineer… not great, but we still had our house. A couple of years we couldn't afford Christmas or big holidays.' (P7)	2008 crash, financial hardship, family security	Economic conditions and stability seeking	

'I'm 35…. It was [diagnosed] February of last year.' (P5)	Age 35, adulthood, late diagnosis	Late diagnosis	Generational pathways to diagnosis
'[I was] 29 when [I] got diagnosed.' (P10)	Age 29, young adulthood, late diagnosis		
'I am 41 of age…. I only got diagnosed officially in May of this year.' (P2)	Age 41, adulthood, late diagnosis		
'At the time, I know it kind of felt like, you know, it wasn't as socially acceptable. And so if you were getting a diagnosis, there was something wrong, you know.' (P9)	Diagnosis, stigma, social acceptability, perceived deficit, school context	Delays tied to masking or stigma	
'[I was] diagnosed at 28…. [The] public system refused dual diagnosis… said one can make the other appear on the test.' (P9)	Dual diagnosis, outdated system	Late diagnosis: barriers in healthcare systems	
'I was initially diagnosed with Asperger's when I was nine… and they changed it to autism because it was removed from the DSM when I was… 27.' (P3)	Childhood diagnosis, reclassification, DSM change	Changing diagnostic categories	
'My parents… school was very important to them. The main reason why it was so important to them is because they didn't have the opportunity to go to college.' (P5)	Parents, importance of school, college, no opportunity	Educational expectations and pressures	Family influence
'My uncle worked in the bank so my mam said I was to go work in the bank… they paid for college and gave study leave.' (P2)	Family connection, banking job, study leave	Family-directed career pathways	

'My parents wanted me to try college to see if it suited me, but there was no pressure to stay.' (P8)	Parents, try college, no pressure, family education	Family support	

Synthesis of Findings

From the analysis, five conceptual clusters were identified: identity and self-presentation, workplace dynamics and inclusion, career and development, well-being and coping, and generational context. Each cluster captures distinct aspects of participants' lived experiences, but together they reveal a dynamic and interdependent system rather than isolated domains.

Interconnections across clusters

The clusters are tightly interwoven. Choices around disclosure and masking (identity and self-presentation) directly influenced access to accommodations, workplace relationships, and perceptions of inclusion (workplace dynamics and inclusion). Experiences of support or exclusion in turn shaped career stability, opportunities for progression, and broader definitions of success (career and development). Where misfit or lack of support persisted, participants described heightened risks of stress and burnout (well-being and coping). These pathways were never purely individual but were profoundly shaped by cultural, economic, and familial conditions that varied across generations (generational context).

Iterative and cyclical pathways

A key insight from the findings is that participants' experiences do not follow a linear trajectory but unfold through recurring cycles of self-presentation, negotiation of workplace dynamics, career recalibration, and coping. For instance, an employee may disclose a diagnosis to secure accommodations, encounter either supportive or dismissive managerial responses, adjust their career plans in light of these experiences, and then develop coping strategies to manage the resulting impacts on well-being. Over time, these processes loop back on one another, shaping future disclosure decisions, workplace interactions, and career aspirations.

When these iterative cycles are seen as part of a broader generational context, the latter can function as an interpretive lens around it. Cultural norms, economic conditions, and family expectations influenced not only when participants received diagnoses but also the kinds of career pathways and workplace supports perceived as attainable. Thus, while the inner cycle captures the dynamic negotiations of workplace neurodiversity on a personal and organisational level, the generational layer highlights how broader historical and cultural forces frame and constrain these pathways.

Integrating the findings into a model

Based on these findings and our observations, we propose the Workplace Neurodiversity Dynamics: Navigating Inclusion and Exclusion Model. It illustrates how neurodivergent professionals continuously move through interconnected domains of identity and self-presentation, workplace dynamics and inclusion, career development, and well-being and coping (Figure 4).

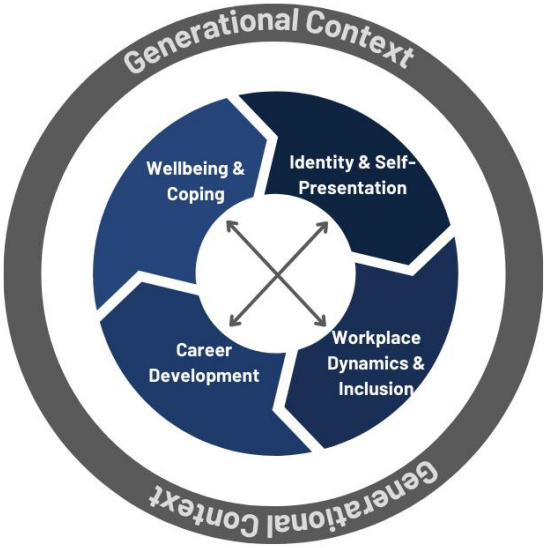

Figure 4. Workplace Neurodiversity Dynamics: Navigating Inclusion and Exclusion Model.

The model depicts four interconnected domains: identity and self-presentation, workplace dynamics and inclusion, career and development, and well-being and coping, linked in cyclical, non-linear pathways with no fixed entry point. Generational context surrounds the cycle as an interpretive lens, highlighting how cultural and historical factors shape workplace experiences of neurodivergent professionals.

The model represents participants' experiences as a cyclical and non-linear process. Rather than progressing through fixed stages, neurodivergent professionals move between the four interconnected domains. Experiences in one domain consistently flow into and reshape the others. For example, disclosure practices influence workplace dynamics, which in turn shape career satisfaction and well-being, ultimately feeding back into new identity decisions.

The model emphasises that there is no single-entry point. Participants entered the cycle through different domains. Some enter at the moment of late diagnosis (identity), while others do so through exclusion or support in the workplace, and still others during times of burnout or career transition. Movement is not always sequential; participants often described 'shortcuts' across domains, such as masking leading directly to burnout, or workplace exclusion triggering withdrawal from identity

disclosure. The arrows in the model highlight these iterative loops, underscoring that inclusion and exclusion are constantly renegotiated rather than achieved once and for all.

On the perimeter, generational context functions as a surrounding interpretive lens. Cultural and historical conditions such as economic recessions, shifting diagnostic categories, and evolving awareness of ADHD and autism in Ireland shape how individuals have encountered each domain and the kinds of opportunities or barriers they faced. This broader lens reminds us that while neurodivergent professionals actively navigate their workplaces, their pathways are embedded within generational structures that enable, constrain, or redirect the cycle. Taken together, the model reconceptualises workplace inclusion not as a static end state, but as a dynamic, iterative, and contextually shaped process.

Discussion

Introduction

This study examined how neurodivergent professionals with ADHD and/or autism in Ireland navigate workplace identity, organisational culture, career development, and well-being, with attention to generational differences. The thematic analysis generated five interrelated domains: 1) identity and self-presentation, 2) workplace dynamics and inclusion, 3) career and development, 4) well-being and coping, and 5) generational context. The last of these captured in a cyclical conceptual model of workplace inclusion. This discussion interprets the findings in relation to existing literature, highlights contributions, and outlines implications for organisations, managers, and policymakers.

Identity and self-presentation

The findings demonstrate that disclosure is not a fixed act but a dynamic, situational process. Participants adopted varied approaches: Selective disclosure that emphasised strengths, radical openness as authenticity, and strategic non-disclosure until performance evidence could counter bias. These strategies align with already-existing scholarship conceptualising disclosure as a continuum rather than a binary choice (Doyle & McDowall, 2021; Hutson & Hutson, 2023). The accounts also highlight that disclosure outcomes depend less on individual strategies than on organisational culture. Inconsistent or negative responses from managers often curtailed future openness, reinforcing earlier findings that disclosure remains a risky strategy in workplaces lacking psychological safety (Bury et al., 2021; Diener et al., 2020).

Masking emerged as a common practice, used to navigate expectations but linked to exhaustion, delayed diagnosis, and reduced authenticity. This echoes literature connecting masking to stress and burnout (Botha et al., 2023) and reflects the ‘double empathy problem,’ where mutual misunderstandings between autistic and non-autistic individuals reinforce misrecognition (Milton, 2012). Generational patterns were clear: Generation X participants, diagnosed later in life, relied heavily on masking and long-term coping, while Generation Z were more likely to integrate neurodivergence into identity and disclose openly. This supports research showing that generational shifts

in awareness and diagnostic access shape whether neurodivergence is framed retrospectively as a challenge or prospectively as an identity (Abdelnour et al., 2022; McDonald, 2020).

Workplace dynamics and inclusion

Managerial influence was decisive in shaping whether participants experienced belonging or exclusion. Supportive managers facilitated flexibility, recognition, and inclusion while dismissive responses led to disengagement or the employees leaving. These findings confirm research that shows inclusion often relies on individual managers' awareness and goodwill rather than embedded organisational structures (Austin & Pisano, 2017; Ezerins et al., 2024). Participants described loyalty to managers who recognised their strengths and provided meaningful – albeit small – accommodations. This aligns with literature on neuroaffirmative leadership practices (Antony et al., 2024).

Conversely, when disclosure was ignored or dismissed, employees reported isolation, reinforcing concerns that reliance on ad hoc accommodations creates inconsistency and inequity (Bury et al., 2021). Tokenistic diversity initiatives were perceived as particularly damaging, as they undermined trust and authenticity, echoing critiques of superficial inclusion efforts (Whelpley et al., 2021).

Generation X participants recalled workplaces where disability was rarely acknowledged and accommodations depended almost entirely on managerial discretion. Millennials described more formal policies but limited enforcement, while Generation Z entered workplaces where diversity discourse was more visible but not always implemented in practice. This progression reflects wider cultural shifts in Ireland and internationally, where inclusion has become a normative expectation but gaps persist between policy and lived experience (AHEAD, 2023; OECD, 2021).

Career and development

The career trajectories of participants were often non-linear and shaped by environmental fit rather than conventional progression. Many participants described frequent job changes due to misalignment with workplace expectations, supporting research that poor environment fit is a major barrier for neurodivergent professionals (Pfeiffera et al., 2017). Where workplaces offered flexibility and recognition of strengths, participants reported satisfaction and stability. This aligns with studies showing that adaptive environments can unlock the unique contributions of neurodivergent employees (Hotte-Meunier et al., 2024; Loison, 2024).

Education emerged as a formative influence, with participants recalling exclusionary experiences such as pressure, lack of accommodations, or misinterpretation of traits as behavioural problems. These accounts echo evidence that traditional educational systems often fail to support neurodivergent learners, shaping long-term confidence and career choices (Rau et al., 2020; Sainsbury et al., 2023). Yet isolated supportive educators made a significant difference, suggesting that relational support can offset systemic barriers.

A notable contribution of this study is the reframing of success. Rather than equating achievement with promotion or salary, success was defined as balance, well-being, and meaningful contribution. This challenges linear models of career progression and resonates with strengths-based approaches that value diverse contributions (Loison, 2024; Whelpley et al., 2021). Generational contrasts again appeared: Generation X emphasised security and stability, Millennials often described retrospective reinterpretation of their careers, and Generation Z highlighted purpose and authenticity, consistent with broader generational trends (Deloitte, 2025; Francis & Hoefel, 2018).

Well-being and coping

Well-being was precariously balanced between personal coping strategies and structural barriers. Participants described burnout as cumulative, arising from masking, overcommitment, and cognitive intensity. This finding reinforces literature linking masking fatigue and sensory overload to heightened burnout risk (Botha et al., 2023; Milton et al., 2022). Emotional regulation challenges were compounded by environments poorly suited to neurodivergent needs, highlighting that workplace stressors are relational rather than purely individual (Bury et al., 2021).

Coping strategies ranged from adaptive practices, walking, creative hobbies, digital task aids, to moderated compulsions adapted for social acceptability. These strategies illustrate resilience and creativity but also the burden of constant self-regulation. Support networks, especially family and trusted colleagues, were described as critical buffers against burnout, aligning with findings that relational contexts play a vital role in sustaining well-being (Doyle, 2020; Hutson & Hutson, 2023). Generational patterns were again visible: Generation X participants described chronic burnout as linked to decades of coping without support, while the younger cohorts were more likely to frame well-being in terms of balance and proactive coping, reflecting cultural normalisation of mental health discourse (Deloitte, 2025; McDonald, 2020).

Generational context as interpretive lens

A distinctive contribution of this study is the integration of generational context. Diagnostic access, stigma, and workplace expectations varied markedly across all three cohorts. Generation X participants frequently received diagnoses only in midlife, retrospectively reassessing long-standing challenges. Millennials often turned to online communities for self-identification prior to formal diagnosis, while Generation Z benefitted from broader diagnostic frameworks and earlier recognition. These findings enrich biopsychosocial models of neurodiversity (Doyle, 2020; Hutson & Hutson, 2023) by embedding them in wider contexts.

Family expectations and economic conditions also shaped career trajectories. Generation X emphasised security, reflecting recessions and labour market instability during their formative years, while Millennials and Generation Z prioritised purpose, flexibility, and balance, consistent with cultural shifts in workplace values (Francis & Hoefel, 2018; Johns Hopkins Imagine, 2022). This generational framing highlights that inclusion cannot be understood solely at the individual or organisational level; it must

also be situated within historical conditions that structure opportunities and constraints.

Contribution of the study

This study makes both conceptual and empirical contributions to the field of neurodiversity and workplace inclusion. Drawing on the authors' observations and participants' narratives, the study advances a conceptual framework that depicts workplace inclusion for neurodivergent professionals as a cyclical, non-linear process. Rather than treating inclusion as a fixed outcome or the result of discrete accommodations, the framework highlights the iterative negotiations through which professionals manage identity, organisational culture, career development, and well-being. Although based on a small sample, this framework provides a useful interpretive lens for understanding the dynamics of inclusion and offers a foundation for future research to refine and test in broader contexts.

A second contribution is the use of generational context as an interpretive lens. The findings show how diagnostic access, stigma, and expectations of inclusion were patterned across cohorts. Generation X emphasised coping before late-life diagnosis, Millennials navigating retrospective reinterpretation, and Generation Z framing neurodivergence as a more visible and integral identity. This generational framing suggests that inclusion is shaped not only by organisational culture but also by the historical moment in which individuals come of age.

Empirically, this research provides one of the first qualitative examinations of ADHD and ASD in the Irish workplace. While international literature has explored disclosure, accommodations, and stigma, there remains limited insight into how these issues unfold in Ireland, where neurodiversity is not explicitly recognised in employment law (NDA, 2025; OECD, 2021). By capturing the lived experiences of Irish professionals across generational cohorts, this study addresses that gap and contributes evidence directly relevant to national debates about inclusion.

Finally, the study amplifies the ways neurodivergent professionals themselves define success, resilience, and inclusion. Participants consistently reframed achievement in terms of balance, well-being, and meaningful contribution, challenging deficit-oriented perspectives and supporting strengths-based, neuroaffirmative approaches (Antony et al., 2024; Loison, 2024; Whelpley et al., 2021).

Together, these contributions position the study as both an interpretive framework and an empirical resource. By situating lived experiences within generational and cultural contexts, the research adds nuance to existing scholarship and highlights directions for future investigation, while offering practical insights into how workplaces might better support neurodivergent employees.

Implications

The findings carry important implications for organisations, managers, policymakers, and neurodivergent employees.

For organisations, inclusion should move beyond ad hoc accommodations towards systemic neuroaffirmative practices. Embedding flexible policies, adaptive

recruitment, and inclusive workplace design is critical to ensuring support does not depend solely on managerial discretion.

For managers, the findings highlight the pivotal role of everyday practices. Empathy, flexibility, and recognition of individual strengths was shown to enable participants to thrive, while dismissive responses undermined their trust. Training that equips managers to adapt communication styles, offer structured scaffolding, and resist tokenism could significantly reduce burnout and employee turnover.

For policymakers, the absence of explicit recognition of neurodiversity in Irish employment law creates inconsistency in workplace practices. Embedding neurodiversity explicitly within national strategies, informed by lived experience, could strengthen accountability and reduce reliance on individual disclosure.

For neurodivergent employees, the study validates diverse strategies of identity management and coping. Disclosure, masking, or selective openness were shown to be context-dependent rather than fixed. Recognising this diversity may empower individuals to adopt strategies suited to their circumstances while also advocating for systemic change.

Strengths and limitations

A key strength of the study lies in centring lived experience, offering nuanced insight into how neurodivergent professionals navigate identity, workplace culture, and career to support their well-being. The incorporation of a generational lens adds a distinctive interpretive layer rarely applied in neurodiversity research. The Irish focus further contributes value by situating findings within a national context where policy gaps remain.

Limitations include the modest sample size of ten participants, which, while sufficient for thematic saturation, restricts generalisability. The focus on ADHD and ASD excludes other neurodivergent profiles such as dyslexia or dyspraxia. Recruitment through personal networks may have favoured participants more comfortable with disclosure, potentially limiting diversity of perspective. Finally, the majority of participants were Millennials, which may skew intergenerational comparisons.

Future research

Future studies should include larger and more diverse samples, encompassing a broader range of neurodivergent profiles and occupational sectors. Longitudinal designs could trace how disclosure strategies, career trajectories, and well-being evolve over time, capturing the cyclical processes described here. Comparative research across cultural and policy contexts could illuminate how legal recognition and organisational frameworks shape inclusion. Finally, the conceptual framework developed here offers a foundation for mixed-methods research to test the prevalence and impact of the cyclical dynamics identified.

Conclusion of discussion

This study highlights that workplace inclusion for neurodivergent professionals is not a static outcome but a cyclical process shaped by identity negotiation, organisational

culture, career development, and well-being. Generational context further conditions these dynamics, influencing diagnostic pathways, advocacy styles, and expectations of inclusion. By situating lived experiences in an under-researched context, the study extends scholarship conceptually and empirically while offering practical guidance for organisations and policymakers. Building neuroaffirmative workplaces requires moving beyond reliance on individual disclosure or managerial goodwill toward systemic practices that recognise inclusion as an ongoing, dynamic process.

Conclusion

The aim of this study was to explore how neurodivergent professionals with ADHD and/or ASD in Ireland navigate workplace identity, organisational culture, career development, and well-being and how generational context shapes these experiences. Using inductive thematic analysis, the research examined the lived accounts of participants across Generation X, Millennials, and Generation Z to understand the conditions that enable or constrain inclusion.

The findings highlight five key insights. First, disclosure and identity management emerged as dynamic, situational strategies rather than fixed choices, with participants continually weighing authenticity against risk. Second, organisational culture and managerial practices played a decisive role in shaping whether employees experienced belonging or exclusion, reinforcing the importance of systemic rather than ad hoc approaches to inclusion. Third, participants' career pathways often diverged from linear models of advancement, instead emphasising environmental fit, balance, and meaningful contribution as markers of success. Fourth, well-being was precariously balanced between personal coping strategies and structural barriers, with burnout linked to long-term masking and inconsistent support. Finally, generational context provided an interpretive lens for understanding these experiences: late-life diagnoses and coping strategies characterised Generation X; retrospective reinterpretation was prominent among Millennials; and greater openness and advocacy were more common among Generation Z.

The study makes two main contributions. Conceptually, it offers a framework that reconceptualises workplace inclusion as a cyclical, non-linear process shaped by ongoing negotiations across identity, culture, career, and well-being. It also introduces generational context as a critical lens, showing how historical conditions shape diagnostic access, identity, and expectations of inclusion. Empirically, it provides one of the first qualitative examinations of neurodivergent professionals in the Irish workplace, addressing a gap in the literature.

While the study is limited by its modest sample size and focus on ASD and ADHD, it offers valuable exploratory insights that can inform future research. Larger, more diverse, and longitudinal studies are needed to refine and test the framework, and comparative research across national contexts could further illuminate how policy and culture shape workplace inclusion.

Ultimately, the findings underscore that inclusion for neurodivergent professionals cannot be reduced to isolated accommodations or individual acts of disclosure. Instead, it is an iterative process, co-constructed through everyday interactions,

organisational cultures, and generational contexts. Recognising inclusion as dynamic rather than static offers both scholars and practitioners a more accurate and actionable way of understanding the realities of work, and a pathway toward building more sustainable and equitable workplaces in Ireland and beyond.

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Parenting Stress and Parental Self-Efficacy in Parents of Autistic and Non-Autistic Children: A Comparative Study

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Abstract

Parenting stress has been highlighted as concerning among parents of autistic children. However, no comparative analysis has investigated the differences between these parents and parents of non-autistic children. The current study investigated parenting stress and the combined influence of parental self-efficacy and current behavioural difficulties among both groups. Parents (n = 155) completed a survey regarding their perceived stress, their perceived competence as parents, and their child's emotional and behavioural challenges. Results indicated that parents of autistic children experienced significantly greater stress than parents of non-autistic children. Parental self-efficacy significantly predicted parenting stress and the child's behavioural difficulties. In contrast, the child's age was not a significant predictor of parenting stress. When parental self-efficacy was controlled for, the relationship between parenting stress and their child's behavioural problems was no longer significant. No differences emerged between mothers and fathers in perceived stress. Overall, the findings highlight the crucial role of parental self-efficacy and provide important directions for future research.

Keywords: autism, parents of autistic children, autistic children, autism in adolescence, autism-diagnosis

Introduction

Autism is a neurodevelopmental condition typified by impairments in social communication and interaction, normally manifesting in early childhood. Autism can also be typified by restrictive and repetitive behaviours and interests, and can significantly affect an individual's day-to-day life. Autism presents as a spectrum, with symptoms varying based on age, gender, condition severity, and developmental stage (American Psychiatric Association, 2022).

The worldwide estimate of autism prevalence is one in 154 individuals (Zeidan et al., 2022). The rise of autism during recent years is impacted by a number of factors, including changes to diagnostic criteria, increased awareness of autism, greater access to services, greater education concerning the topic, and more individualised programs designed for autistic children (Hansen et al., 2015; Hirota & King, 2023; Zeidan et al., 2022). The male-to-female ratio among autistic children is approximately 3:1 (Hirota & King, 2023; Loomes et al., 2017), and it is suggested that the 'female protective effect' may play a role (Zeidan et al., 2022), and that females are more likely to hide their symptoms (Fombonne, 2020). This may also explain why, when identified as being autistic, females are more likely to present severe traits (Zeidan et al., 2022).

A range of genetic and environmental factors have been associated with autism, although none are exclusively specific to its development (Hirota & King, 2023). Moreover, no medications have been shown to effectively treat the core diagnostic symptoms of autism, and first-line therapy consists of behavioural interventions and specific treatment of co-occurring conditions (Hirota & King, 2023).

In terms of caring for autistic children, this can often place significant pressure on parents (Miranda et al., 2019) and the challenges experienced by parents are notably greater than those faced by parents of non-autistic children (Hastings & Brown, 2002; McStay et al., 2014). Among the wide range of stressors, autism-specific behaviours have been identified as a significant source of parenting stress (McStay et al., 2014; Miranda et al., 2019). However, evidence suggests that parents with a strong sense of self-efficacy are better prepared to manage these challenging child behaviours (Bandura, 2002; Strauss et al., 2022), indicating that parental self-efficacy (PSE) may be an important factor in raising an autistic child.

Many researchers have investigated why parenting an autistic child is more challenging than parenting a non-autistic child. However, there is negligible literature concerning comparative analyses on the combined influence of PSE, current behavioural difficulties, and parenting stress. Therefore, this comparative study investigates parenting stress in families of autistic and non-autistic children, identifying key associative factors.

Parenting Stress

Stress concerns the interplay between an individual's personal attributes and the environmental pressures they encounter. It is conceptualised as an individual's mental assessment of a demanding situation, and perception of it as overwhelming, which may impact their overall well-being (Lazarus & Folkman, 1984). Parental stress can

be understood as a parent's perception of challenges and feelings of inadequacy in fulfilling the demands of their parenting role. This involves behavioural, cognitive, and emotional factors linked to how an individual views their parental responsibilities. Elevated stress levels in this domain can contribute to further difficulties, such as the development of cardiovascular diseases, and negatively impact cognition, the immune system, and memory (Zafar et al., 2021). Evidence suggests that the stress of parents of autistic children occurs at clinically significant levels in 77% of cases (Kiami & Goodgold, 2017).

Although parenting stress is a well-researched issue among parents of autistic children, the mechanisms underlying it are still unclear. A meta-analysis performed by Hayes and Watson (2013) highlights that parents of autistic children experience greater levels of stress compared to families with non-autistic children or those with other diagnoses (see also Estes et al., 2013; McStay et al., 2014; Miranda et al., 2019). It is important to note, however, that autism is not a singular condition but a spectrum involving diverse pathophysiologies (Casanova et al., 2020). Indeed, mental health issues (e.g. anxiety disorders, obsessive-compulsive disorder [OCD]) and neurodevelopmental conditions (e.g. attention-deficit hyperactivity disorder [ADHD]) are significantly more prevalent among autistic individuals compared to the general population. Mosner et al. (2019) report that 70% to 95% of autistic children and adolescents, and 73% to 81% of autistic adults, meet the criteria for at least one such condition. These comorbidities in autism do not occur uniformly, and autistic individuals may present one or more additional diagnoses, such as epilepsy, cerebral palsy, and those mentioned above (Casanova et al., 2020; Hayes & Watson, 2013).

The symptoms of co-occurring conditions may be easily masked as maladaptive, or 'autistic,' behaviours. When comparing the parenting stress of parents of autistic children, this can present confounding effects with other hidden conditions, as several characteristics overlap across different conditions (Casanova et al., 2020). This suggests that parenting stress levels may be impacted by the presence of diagnoses rather than the presence of autism alone.

Parental self-efficacy

Self-efficacy refers to an individual's confidence in their ability to successfully execute a task within a given situation (Bandura, 1977). Accordingly, parental self-efficacy (PSE) encompasses parents' beliefs regarding their influence on their children (Glatz et al., 2024) and their perceived competence in their parenting responsibilities (Wittkowski et al., 2017). Elevated PSE is important for fostering the well-being of both parents and their children (Albanese et al., 2019; Kishimoto et al., 2023). Furthermore, heightened PSE has been linked to a reduction in parenting stress (Glatz et al., 2024; Kishimoto et al., 2023). Consequently, PSE may play an important role in neurodivergent families, where greater PSE may result in more confident parenting, more active engagement with children, and adoption of healthy parenting styles (Kishimoto et al., 2023).

Interestingly, the self-efficacy of parents of autistic children has only recently seen increased attention in the literature (Glatz et al., 2024). For example, Kishimoto et al. (2023) report a moderate correlation between PSE and parenting stress, emphasising the important role of PSE in reducing parenting stress (see also Batool & Khurshid, 2015). Importantly, such studies help to inform potential strategies to support parents of autistic children.

Child behaviour

Enea and Rusu's (2020) systematic review highlights that children's behavioural characteristics have a relationship with parenting stress. Some, commonly seen in autistic children, involve stereotypical repetitive behaviours, difficulty with sensory processing, atypical behaviours, problematic behaviours, issues with Performance Intelligence Quotient (PIQ), sleeping difficulties, and pro-social behaviours. Many autistic children also present ADHD, and the specific hyperactivity element can impact parenting stress, often as a result of external disapproval and social judgement (McStay et al., 2014). Moreover, externalising behaviours (e.g. aggression) and internalising behaviours (e.g. anxiety) are also commonly observed among autistic children (Zaidman-Zait et al., 2014).

Interestingly, Hastings (2002) proposed a model to examine specific behavioural problems in children with developmental disabilities, and suggested a bidirectional relationship between children's problem behaviours and parenting stress. In this model, problem behaviours contribute to parenting stress, with parenting stress, in turn, influencing parenting behaviours, possibly exacerbating the child's problem behaviours, creating a cycle.

Hasting's model encouraged researchers to adopt a broader perspective on how child behaviour may interact with other variables. For instance, McSherry et al. (2019) suggest that problematic child behaviours have a strong relationship with parenting stress; however, the direction of this relationship remains challenging to determine. Indeed, Strauss et al. (2022), who investigated the mediating role of PSE in the relationship between parenting stress and a child's behavioural problems, posit that self-efficacy plays a mediating role for fathers, while this effect is not observed in mothers. This is an important finding, given that mothers are typically the primary carers of autistic children (Miranda et al., 2019).

Furthermore, some studies suggest that parents of non-autistic children exhibit lower levels of stress compared to parents of autistic children (Estes et al., 2013; Hayes & Watson, 2013), suggesting that autism-specific behaviours may predict parenting stress (Miranda et al., 2019). Interestingly, no research to date has comparatively investigated the role of parental-reported child behavioural issues on parenting stress, while controlling for PSE. This study aims to investigate this particular issue.

Parent's gender

Gender differences in child-rearing have been studied extensively, with mothers typically assuming the nurturing role and fathers often adopting a more protective one (Yaffe, 2023). Evidence suggests that such gender differences are also observed when parenting an autistic child, with mothers being more impacted by their child's behavioural problems. This distinction is largely attributed to mothers' greater involvement in the care of their autistic child, as well as gender-related differences in coping strategies (Hastings et al., 2005). Specifically, mothers are more likely to adopt emotion-focused coping mechanisms, with fathers adopting problem-focused coping (Al-Oran et al., 2022; Hastings et al., 2005), suggesting differences in how mothers and fathers might experience behaviourally-related situations.

Several studies on the impact of parents' gender on parenting stress levels present conflicting findings. A mounting body of evidence suggests no significant differences in stress levels between mothers and fathers of autistic children (see Di Renzo et al., 2022; Hastings, 2003; Hastings et al., 2005; Rodriguez et al., 2019). Conversely, other

studies highlight higher stress levels among mothers, with mothers being more likely to score above the clinical cut-off points for parenting stress (see Batool & Khurshid, 2015; Davis & Carter, 2008). Moreover, maternal parenting stress is reported to be higher even when compared to fathers in the same family (Hastings & Brown, 2002).

Interestingly, a systematic review reported only a limited number of studies that included fathers and caregivers (Barroso et al., 2018). As an example, Rivard et al. (2014) found that fathers reported higher stress levels than mothers, with a larger proportion of fathers (61%) scoring in the clinical range compared to mothers (54%). Consequently, and following from Barroso et al.'s position, the level of parenting stress of mothers and fathers for both autistic and non-autistic children is explored in this study.

Terminological considerations in the current study

In the present paper, the authors employ neuroaffirmative terms in line with current best practice, for example, employing the terms 'autistic child' or 'autistic children.' The authors further considered certain terms for the comparison group, such as 'neurotypical' and 'non-autistic.' For precision, as a notable percentage of parents of the comparison group may report their children as having another diagnosis, which may be classified as another neurodevelopmental condition, this study opted to adopt the term 'non-autistic' for the comparison group. Therefore, both comparison groups are heretofore referred to as 'autistic' and 'non-autistic.'

Current study

Despite the growing body of research on parenting autistic children, significant gaps remain in understanding the factors contributing to parenting stress. Among the gaps in the literature, one key area is PSE and parenting stress among parents of autistic children and non-autistic children. Another gap concerns the relationship between parenting stress and the child's behavioural difficulties while considering the influence of PSE. Lastly, the underrepresentation of fathers in prior studies is considered, to examine whether this has biased findings on parenting stress or whether the observed differences reflect genuine variations between mothers and fathers. The aim of this study is to explore such gaps and compare the parents of autistic children with the parents of non-autistic children.

Investigating the combined influence of PSE, child behavioural difficulties, and parenting stress, the study can identify critical and modifiable factors, directly informing the design of evidence-based psychological and behavioural interventions aimed at boosting PSE, which is strongly linked to reduced parenting stress and better management of challenging child behaviours. The research will clarify the sometimes-conflicting roles of parents' gender on stress levels, leading to support programs that are specifically tailored to the distinct needs of mothers and fathers. The high prevalence of clinically significant stress and the identification of key associative factors can be used to advocate for and guide policymakers in allocating resources for family support services, mental health services, and educational programs for neurodivergent families.

Therefore, the first hypothesis is that there will be a relationship between parenting stress and child behavioural difficulties while controlling for PSE. The second hypothesis is that parents of autistic children will report significantly higher levels of parenting stress compared with parents of non-autistic children. The third hypothesis

is that fathers and mothers will significantly differ in their experience of stress levels. Finally, the fourth hypothesis predicts that parenting stress will increase as PSE decreases.

Methodology

Participants

A quantitative, comparative survey was employed in this study to investigate the parents of non-autistic children and the parents of autistic children. The inclusion criteria were as follows:

1) Parents of a child aged between 4–17 years old
2) Able to provide informed consent
3) Over 18 years of age

The study employed snowball and convenience sampling via social media platforms, with a focus on parent support groups for the general population and those with autistic children. In total, 172 parents engaged with the survey, with 17 cases deemed ineligible, including parents who did not provide consent (n = 5), parents who had children three years of age or younger (n = 9), parents whose answers lacked reliability or validity (n = 1), and participants who did not have a child (n = 2). The final sample consisted of 155 parents, of which 76 were parents of autistic children (49%), and 79 parents of non-autistic children (51%). The sample size was determined based on previous studies with similar populations and research design (McStay et al., 2014).

Participants were predominantly female (61.3%). The parents' ages ranged from 28 to 59, with an average age of 42.6 years (Standard Deviation = 6.26). Participants were most commonly white (95.5%), married (69.7%), with a master's degree or higher (39.4%), and working full-time (58.7%). The children of participants ranged in age from 4–17 years (Median = 10.02, SD = 4.00), with boys comprising the majority (57.3%).

Among the autistic children, 35.5% were reported as having no co-occurring conditions, 22.4% as having one co-occurring condition, 21.1% as having two, and 19.6% as having three or more co-occurring conditions. Among the non-autistic children, 64,5% were reported as having no diagnoses, 28.9% were reported as having one diagnosis other than autism, and 6,6% reported as having two diagnoses other than autism. As previously outlined, to avoid assumptions and imprecise terminology, this study adopted the term 'non-autistic' rather than 'neurotypical,' given that some children were reported as not autistic, but as having other diagnoses which may include neurodevelopmental conditions.

Materials

Parental Stress Scale

Parenting stress was measured using the parental stress scale (PSS; Berry & Jones, 1995). The PSS is an 18-item, self-reporting questionnaire designed to assess parental stress. Parents have to respond to statements regarding their relationship with their child, capturing both the rewards and demands of parenting. Answers ranged on a five-point, Likert-type scale from (1) strongly disagree to (5) strongly agree, and consisted of statements such as 'The behaviour of my child is often embarrassing or

stressful to me.' The total score on the scale ranged from 18 to 90, with higher scores indicating greater levels of parental stress. Cronbach's α coefficients from previous studies have demonstrated good internal reliability (e.g., .83; Berry & Jones, 1995). The Cronbach's α in the current study was .89.

Brief parental self-efficacy scale

To measure the parents' perceived confidence and efficacy in their parenting role, the study used the brief parental self-efficacy scale (BPSES; Woolgar et al., 2023). The BPSES is a five-item model assessing competence and efficacy on a five-point, Likert-type scale ranging from (1) strongly disagree to (5) strongly agree. An example of a statement includes, 'I am able to do the things that will improve my child's behaviour.' Higher scores reflect greater levels of PSE. Previous research by Woolgar et al., (2023) reported a Cronbach's α of .75, demonstrating good internal consistency, and converged with an already solid but longer measure of PSE. The Cronbach's α coefficient in the present study was .83.

Child behavioural problems measure

Children's behavioural difficulties were assessed by the strengths and difficulties questionnaire (SDQ; Goodman, 1997). The SDQ is a 25-item questionnaire developed to assess emotional and behavioural problems in children and adolescents. The items are rated on a three-point Likert scale ranging from (0) not true, (1) somewhat true, or (2) certainly true. It consists of four subscales to measure major difficulties: emotional symptoms, conduct symptoms, hyperactivity/inattention, and peer relationships. Additionally, it has one subscale to assess strengths: prosocial behaviour. The scale can be completed by parents or teachers of children aged from four to 17 years old. Examples of statements include 'See tasks through the end' and 'Constantly fidgeting or squirming.' Total scores range from zero to 40, with a higher total score indicating a greater total difficulties score (based on 20 items of the four subsections; prosocial behaviour is calculated separately). SDQ is a widely used and well-established scale used to measure adjustment and psychopathology of children and adolescents, previously demonstrating reliability of α = .73 (Goodman, 2001). The current study's Cronbach's α was .83.

Procedure

Ethical approval for the current study was obtained via the Dublin Business School Human Research Ethics Committee. Parents completed a questionnaire of self-report measures, including sociodemographic items, questions about their children, and questions regarding the presence or not of an autism diagnosis, followed by the BPSES, the SDQ, and the PSS scales. Diagnoses of autism were self-reported and not validated through third-party clinical sources. Parents were instructed to prioritise their responses in a specific order, and in the case of having an autistic child, they should answer about them. In the case of not having an autistic child, parents were asked to answer for the child who required the most attention or support from them. If it occurred that parents had more than one child on the spectrum, they were instructed to respond based on only one of those children. Consent was sought from participants. To guarantee anonymity, no identifiable information was collected.

Data analysis

Data from 155 responses were analysed. Two parental groups were established, 'Parents of autistic children' and 'Parents of non-autistic children,' with descriptive statistics presented for both groups concerning the outcome variables for mothers and fathers. The age of diagnosis for autistic children is further presented. Alpha values were established for the measures used in the study.

A two-way analysis of covariance measured group differences for parental group and child behavioural difficulty level on parental stress while controlling for PSE. Further group differences were explored for the sex of the parent across both parental groups on parental stress. Associations were measured for parenting stress and PSE within both parental groups. Regression explored whether age predicted parental stress. Finally, Spearman's rho analysis was used to measure the association between parental stress and child comorbidity in the autistic child group.

Results

Characteristics of respondents

In total, 155 completed surveys were collected. Table 1 summarises the general characteristics of the respondents.

Table 1. Socio-demographic characteristics of respondents (n = 155)

Demographics	Parents of autistic children M (SD) / %	Parents of non-autistic children M (SD) / %
Age	43.11 (6.23)	42.13 (6.28)
Gender	-	-
Male	27.6	43
Female	69.7	53.2
Marital status	-	-
Married	69.7	69.6
Divorced	10.5	8.9
Parents' education	-	-
College diploma	21.1	20.3
Bachelor's degree	31.6	30.4
Master's degree or higher	36.8	41.8

Annual household income		
Less than €30,000	7.9	7.6
Between €30–75,000	29	24.1
Between €75–130,000	32.9	31.6
Between €130–220,000	6.6	11.4
Above 220,000	2.6	8.9
Employment status	-	-
Full-time employed	51.3	65.8
Part-time employed	9.2	11.14
Homemaker	18.4	6.3
Child's age	10.59 (4.08)	9.45 (3.88)
Number of children	2.12 (1.04)	2.04 (.95)
Child's age at autism diagnosis	7.20 (4.45)	-
Child's additional diagnoses	-	-
No known diagnoses	35.5	63.6
One diagnosis	22.4	28.9
Two diagnoses	21.1	6.5
Three or more diagnoses	21	-

Among parents of autistic children (n = 76), mothers comprised 69.7% of the sample group and fathers 27.6%. Most of them had either two children (50%) or one child (27.6%) in the family. Of the parents with more than one child (72.4%), about 27.6% reported having two autistic children. Boys (n = 49; 64.5%) accounted for the majority of autistic children, and ages generally ranged from four to 17, with a mean age of 11.48 (SD = 4.12). Boys were diagnosed on average at the age of 5.69 years (SD = 3.49). Meanwhile, the girls (n = 23; 30.3%) had an average age of 11.48 (SD = 4.12) with ages also ranging from four to 17 and were diagnosed on average at the age of 9.32 years (SD = 4.80).

Among the parents of non-autistic children (n = 79), mothers comprised 53.2% of the sample group while fathers comprised 43%. Approximately a third of parents had one child (32.9%), with a little more having two children (39.2%). A little over one in five parents had three children (20.3%), with 7.6% having four or more in the family. Among the non-autistic children, gender was more balanced, with both boys (n = 39; 50.6%) and girls (n = 37; 48.1%) presenting an average age of nine years (SD = 3.56), ranging from four to 17.

To evaluate the reliability of these scales and subscales, a Cronbach alpha (Cronbach, 1951) was calculated. The Cronbach's alpha reliabilities for the measuring scales PSS, BPSES, and SDQ indicated good internal reliability consistency, being parental stress (α = .89), PSE (α = .83), and SDQ (α = .83). The subscales of SDQ

demonstrated good internal reliability overall, and peer problems (α = .68) presented a reliability slightly below the recommended cut-off (Tavakol & Dennick, 2011).

Table 2. Criteria for Mean Values

Scale	Low / Slightly low/ Slightly Raised /	Moderate / Close to Average/	High / Low	Very high / Very low
BPSES	5–12	13–19	20–25	-
PSS	18–42	43–66	67–90	-
SDQ	0–13	14–16	17–19	20–40
Emotional Problems	0–3	4	5–6	7–10
Conduct Problems	0–2	3	4–5	6–10
Hyperactivity	0–5	6–7	8	9–10
Peer Problems	0–2	3	4	5–10
Prosocial	8–10	7	6	0–5

Based on the criteria set out in Table 2, both groups scored moderate on levels of parenting stress, and comparatively, parents of autistic children scored higher on levels of behavioural difficulties. Moreover, parents of autistic children performed moderately on levels of PSE, while the non-autistic group reported high levels of competence in their parenting role. In the child behavioural difficulties subscales, the autistic group scored close to average to slightly raised in three out of five subscales, except for prosocial behaviour, where scores were low to very low on average (m = 5.47), and emotional problems, in which scores were slightly raised to close to average (m = 4.79). Interestingly, the mean scores of non-autistic children across all subscales presented average to slightly elevated mean values (see Tables 2 and 3).

Table 3. Mean total and subscales scores on PSS, BPSES, and SDQ (yes, n = 76; no, n = 77)

Autism	Scales and subscales	M	SD	Variance	Min	Max
Yes	BPSES	19.78	3.03	9.19	12	25
	PSS	52.16	10.03	100.53	30	76
	SDQ	19.25	5.64	31.87	00	31
	Emotional Problems	4.79	2.62	6.89	00	10
	Conduct Problems	2.68	2.13	4.54	00	10
	Hyperactivity	7.01	2.42	5.88	1	10
	Peer Problems	4.76	2.13	4.56	1	9
	Prosocial	5.47	2.79	7.80	0	10

No	BPSES		21.09	3.03	9.17	7	25
	PSS		46.97	9.74	94.81	31	75
	SDQ		12.74	6.63	44.01	00	31
		Emotional Problems	3.49	2.59	6.69	00	10
		Conduct Problems	2.08	2.05	4.20	00	10
		Hyperactivity	5.11	2.99	8.95	00	10
		Peer Problems	2.23	2.10	4.41	00	8
		Prosocial	7.88	1.83	3.35	4	10

To test the first hypothesis, investigating the relationship between parenting stress and child behavioural difficulties while controlling for parental self-efficacy, a two-way, between-groups analysis of covariance explored differences in child behaviour difficulties and parenting stress between autistic children and non-autistic children, controlling for PSE as a covariate, resulting in a non-significant difference ($F(3, 143) = 1.70$; $p = .17$; effect size = .03) (see Figure 1).

However, a significant relationship between parenting stress and child behavioural problems was observed ($F(3, 143) = 8.55$; $p < .001$), with a non-significant relationship between autism diagnosis and parenting stress also observed ($F(1, 143) = .09$; $p = .76$). The covariate, PSE, had a weak significant relationship with stress ($F(1, 143) = 1.71$; $p < .001$; effect size = .09).

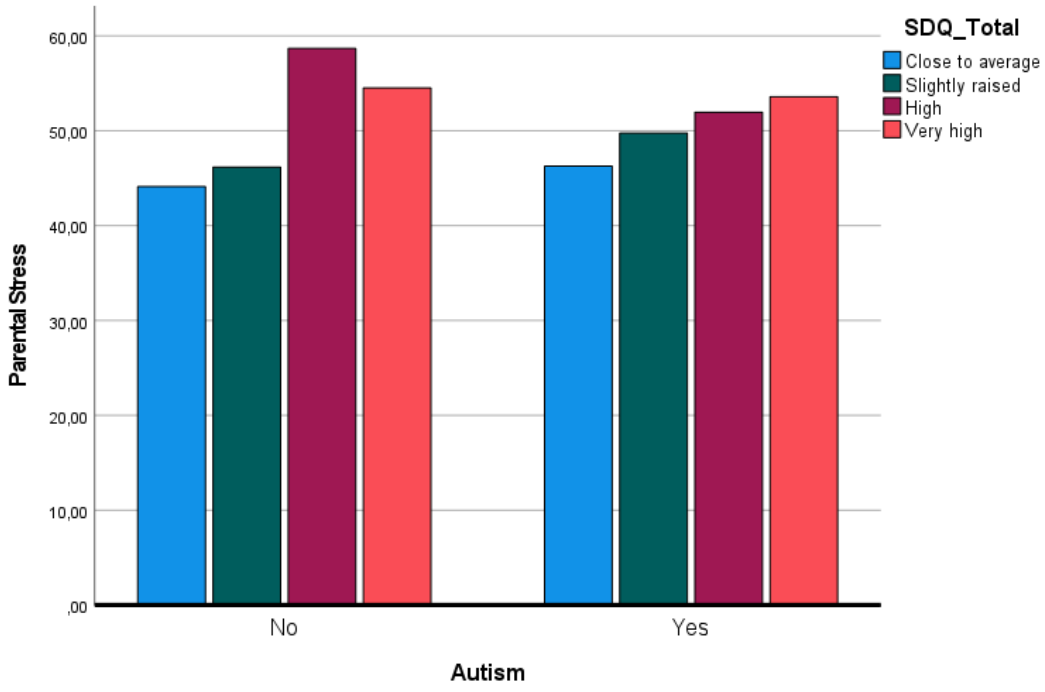

Figure 1. This bar chart illustrates the levels of parenting stress across child behavioural difficulties. The colours indicate the child's behavioural difficulties levels.

Figure 1 illustrates that across both groups, parents experience an increase in perceived stress with higher emotional and behavioural problems in children, as measured by the SDQ. Interestingly, parents of non-autistic children showed higher levels of stress compared to parents of autistic children when the child presented higher behavioural difficulties.

For the second hypothesis, investigating whether parents of autistic children experience higher levels of parenting stress compared with parents of non-autistic children, an independent samples t-test revealed a significant difference in parenting stress between parents of autistic (m = 52.16; SD = 10.03) and non-autistic children (m = 46.97; SD = 9.74), with higher scores among parents of autistic children (t(151) = -3.24; p = .001; CI (95%) -8.34, -2.03).

A two-way, between-groups Analysis of Variance (ANOVA) explored the difference in parenting stress between mothers (m = 47.63) and fathers (m = 45.44) of non-autistic children, and mothers (m = 51.89) and fathers (m = 53.19) of autistic children, with no significant differences observed (*F*(1, 144) = 1.07; p = .303, np2 = .007).

Additionally, no association was found for gender and parenting stress (*F*(1, 144) = .07; p = .795), while a moderate association was found for autism and parenting stress (*F*(1, 144) = 12.68; p = .001; np2 = .08).

Table 4. Pearson's correlation between PSS and BPSES

	Autistic		Non-autistic	
Variables	M (SD)	PSS	M (SD)	PSS
PSS	52.16 (10.03)	-	46.97 (9.74)	-
BPSES	19.78 (3.03)	-.49**	21.09 (3.03)	-.42**

***p < 0.01*

Pearson's correlation analysis found that parenting stress (m = 46.97; SD = 9.74) in parents of non-autistic children, was associated with PSE (m = 21.09; SD = 3.03; r (77) = -.42, p < .01). Similarly, for parents of autistic children, parenting stress (m = 52.16; SD = 10.03) significantly predicted PSE (m = 19.78; SD = 3.03) (r (76) = -.49, p < .01). Correlations in both groups demonstrated a moderate negative relationship, indicating that as parenting stress increased, PSE decreased (see Table 4).

Additionally, a linear regression analysis found no association between child's age and parenting stress (*F*(1,149) = .371, p < .543, R2 = -.004) (age, beta = -.05, p < .543, CI (95%) -.59, .31). In other words, variations in parenting stress were not attributed to the child's age.

Parents reported the prevalence of comorbidities. Among autistic children, 35.5% had no additional diagnosis, 22.4% had one, 21.1% had two, and 19.6% had three or more comorbidities. A Spearman's rho correlation analysis examined the relationship between the child's comorbidities (m = 1.28; SD = 1.16) and parental stress among the autistic group. The results did not indicate a significant correlation (rs(76) = .158, p < .173). Specifically, the number of comorbidities was not associated with parenting stress when parenting an autistic child.

Spearman's rho analyses further revealed that, for both parents of autistic and non-autistic children, household income was not associated with either parenting stress or PSE. Similarly, no association was found for parents' education status on parenting stress or PSE across both groups.

Discussion

Parenting stress has been studied extensively, as it is believed to be an important factor in child behaviour. The purpose of the current study was to compare parents of autistic children with parents of non-autistic children and examine whether autism plays a role in how parents perceive their stress. This study provides a novel exploration of parenting stress, its relationship with child behavioural issues and PSE, comparing parents of autistic and non-autistic children. However, due to its cross-sectional design, the findings should be regarded as preliminary and do not establish causality. Further research and replication are essential, such as through adoption of longitudinal designs, which would provide more details of this association.

Overall, the study found no significant relationship between parenting stress and child behaviour when controlling for PSE in both groups, and no significant differences were identified between the groups regarding this relationship. Results contrasted with the research conducted by Strauss et al. (2022), which found that PSE plays a mediating role in parental stress and child behaviour among fathers of autistic children.

Nevertheless, a significant relationship was found between parenting stress and child behaviour, supporting research studies such as Barroso et al. (2018) and Clauser et. al (2021). Although there was a significant relationship in both groups, the current study identified a pattern of associations between child behavioural problems and parenting stress among parents of non-autistic children. Parents of non-autistic children tended to exhibit higher stress levels when their child presented high and very high behavioural challenges, while parents of autistic children presented higher parenting stress overall, but with a gradual increase in their parenting stress levels as the behaviours appeared to be more challenging. This pattern may suggest that parents of non-autistic children are comparatively less prepared to manage severe behavioural problems, potentially due to less experience with such behaviours on a daily basis. Parents of autistic children may have developed more effective coping mechanisms through exposure to their child's needs and challenges. Additionally, it may be that parental expectations influence these outcomes, as parents of autistic children may anticipate their children's behaviour and experience less abrupt increases in stress when more challenging behaviours occur.

Consistent with other findings which show that parents with greater confidence in their parenting abilities tend to experience lower levels of stress (Batool & Khurshid, 2015; Glatz et al., 2024; Kishimoto et al., 2023), this study found a significant inverse correlation between PSE and parenting stress. This suggests that parenting stress increases as PSE decreases. According to studies (e.g. Glatz et al., 2024), parents' sense of efficacy is shaped by their perception of their child's difficult behaviours, which may suggest that child behaviour may be affecting parenting stress indirectly.

In line with prior research suggesting an association between autism and parenting stress (Davis & Carter, 2008; Estes et al., 2013; Flenik et al., 2023; Hayes & Watson, 2013; McStay et al., 2014; Miranda et al., 2019), the results found a significant

difference in stress levels between parents of non-autistic and autistic children. This suggests that autism may influence how parents perceive stress (Davis & Carter, 2008). High levels of parenting stress in parents of autistic children have been associated with poor child outcomes, such as fewer gains in early teaching intervention for autistic children (Osborne et. al., 2008) and a decrease in child coping competence (Moreland et al., 2016).

Contrasting to our hypothesis, mothers and fathers presented no significant difference in levels of parenting stress across both groups. This is in line with other studies suggesting similar parenting stress among mothers and fathers (see also Di Renzo et al., 2022; Hastings, 2003; Hastings, et al., 2005; Rodriguez et al., 2019). This could be attributed to the fact that parental roles change over time (Bandalović & Gvozdenović, 2024), and fathers could be taking a more present and engaged role in the family. But some other studies suggest that mothers experience higher levels of stress compared to fathers (Batool & Khurshid, 2015; Davis & Carter, 2008) or that fathers experience greater stress (Rivard et al., 2014). Indeed, the higher prevalence of females in the autistic group is consistent with Barroso et al.'s (2018) systematic review, indicating that mothers are typically the primary carers of autistic children, which may explain the underrepresentation of fathers in this group.

Autism can be diagnosed as early as 18 months (van 't Hof et al., 2021), and parents usually report a suspicion of autism in the first 12 months. However, at this stage, some symptoms can be misinterpreted, such as impairment in language development and shyness (Elder et al., 2017). A recent meta-analysis identified that the global mean age at diagnosis of autism is 60.48 months, i.e. five years of age (van 't Hof et al., 2021). In the current study, the average age at diagnosis was 7.2 (SD = 4.45), and the age of the child at diagnosis showed no correlation with parenting stress. Even so, an additional pattern emerged in this study in which, on average, boys were diagnosed two years earlier than girls. The female's ability to hide autistic symptoms may explain this difference (Fombonne, 2020).

Consistent with previous findings (Barroso et al., 2018; McStay et al., 2014), this study indicated no age effects on parenting stress, which may suggest that parenting stress is not predicted by a child's stage of development. Additionally, no significant association was found between autistic children's additional diagnoses and parenting stress. This suggests that parents of autistic children do not experience higher parenting stress due to their child's number of co-occurring conditions.

Concerning strengths, this study achieved reasonable representation with 155 participants, with a representative age range from 28 to 59, and with an even distribution between both autistic and non-autistic groups. It is argued that this study achieved broad representation concerning the relevant population. Moreover, the varied age range provides a broader understanding of the experiences of parents across different life stages. Moreover, the study's focus on parents of school-age children and adolescents offers valuable insight into a developmental period during which parental stress is known to be high (Rivard et al., 2014).

This research, to the best of the researcher's knowledge, is the first to explore such factors influencing parenting stress across both autistic and non-autistic populations. While Strauss et al. (2022) explored similar variables, their study focused on a single group. Furthermore, this study is one of the few comparative studies to assess self-report measures of a child's strengths and difficulties, PSE and parenting stress from the perspective of both mothers and fathers of autistic children. This provides further

contributions to the existing literature by addressing a gap highlighted by previous studies such as Barroso et al. (2018) and Flenik et al. (2023).

Limitations

Adopting a self-reporting design where parents themselves assessed their child's behaviour and their own parenting stress, means that some explanations cannot be ruled out, such as how parents – while experiencing high levels of stress – may be more inclined to perceive their child's behaviour more negatively (Miranda et al., 2019; Rodriguez et al., 2019). To address this challenge, replication studies are important. Moreover, employing teachers to complete the behaviour questionnaire may help mitigate common method bias. In addition, there may be an overlap between parenting-related stress and general stress, resulting in difficulty for parents to discriminate between them.

The results may not fully represent autistic girls, as most of the children in the current study are male. This distribution aligns with the general population of autistic children, as it is well documented that autistic females are underdiagnosed (Hirota & King, 2023). Therefore, findings may not be easily generalised to parents of girls, particularly for fathers, who have been reported to experience higher levels of stress towards parenting girls compared to boys (Rivard et al., 2014).

While this study adopted a developmental perspective, its scope was limited to parents of school-aged children and adolescents. Research indicates that PSE tends to decline during this developmental phase (Glatz et al., 2024), potentially contributing to increased stress levels. Furthermore, younger children often display more typical behaviours and fewer autistic characteristics. A study comparing parents of five-year-olds with those of two-year-olds revealed higher stress in parents of older children (Rivard et al., 2014). Consequently, it remains uncertain whether these findings apply to parents of children under the age of four.

Lastly, the current study investigated the presence of additional diagnoses beyond autism and their influence on parenting stress. However, conditions were not discriminated against, which limited the ability to identify the specific conditions present in both groups. Additionally, the study also lacked in identifying the additional diagnosis, associated health issues, and their influence on parenting stress. These factors may provide a more precise understanding of the nature, frequency, and intensity of influences concerning parenting stress.

Implications and future directions

The current study offers practical insights. The findings reinforce the understanding that parents of autistic children experience greater stress than other parents, and they point to a connection between child behaviour and parental stress. While the difficulties faced by parents raising an autistic child will be present, efforts should concentrate on lessening these stressors through supportive interventions and the development of effective coping mechanisms.

In the current study, participants were primarily white Europeans, married, and of middle socio-economic status, which in turn limits the generalisability of the results. Further research should investigate solo parenting and the experiences of parents from diverse cultural and socio-economic backgrounds.

Although this study considered the age of diagnosis, it did not investigate whether stress levels differed between parents whose children received a recent diagnosis and those diagnosed at an earlier stage. Prior research indicates that the period immediately following an autism diagnosis is particularly stressful for parents (Davis & Carter, 2008). Investigating this would help determine if the timing impacts parenting stress and whether stress levels change over time following the diagnosis.

In the present study, parents of non-autistic children reported higher mean scores for stress compared to parents of autistic children when facing higher behavioural challenges. Given that parents of non-autistic children reported higher mean stress levels when facing greater behavioural challenges, future research should explore potential differences in how these two groups manage behavioural difficulties. Additionally, assuming that PSE predicts parenting stress, further research should investigate whether behavioural challenges arising from a neurodevelopmental condition, which is outside of the parent's control, may impact parents' feelings of competence in their parenting role and their sense of influence over their child, as their challenges are attributed to the condition rather than to their parenting efforts. From an applied perspective, parents having more active involvement in children's support programmes and providing more tailored support for psychological well-being may contribute to increased PSE.

Conclusion

This study highlights important issues concerning parenting stress and its association with autism. Examination of the parents of both autistic and non-autistic children revealed distinct differences in how these groups experience stress. The research establishes a link between parenting stress and PSE, alongside a positive relationship between parenting stress and child behaviour, in line with previous research. The relevance of this study is underscored by the close link between parental stress, parental involvement in interventions for their child, and overall quality of family life.

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‘They Hear “Psychogenic” and Think, “Oh, you’re making it up”’: A Qualitative Study of Stigma and Lived Experience in People with Psychogenic Non-Epileptic Seizures

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Abstract

Psychogenic non-epileptic seizures (PNES) are episodes resembling epileptic seizures but without the neurological abnormalities characteristic of epilepsy. Individuals with PNES (People with PNES) live with unpredictable and disruptive symptoms, yet because the condition is poorly understood and often misrecognised, they are frequently disbelieved, invalidated, and accused of feigning illness in both healthcare and social contexts. This qualitative study explores the lived experiences of PwPNES, with a particular focus on how they encounter societal attitudes and stigma, and the implications of these for their daily life and well-being. A sample of six adults (two male, four female) with PNES took part in online, semi-structured interviews exploring their lived experiences, with a particular focus on stigma. Qualitative data were analysed using Braun and Clarke’s reflexive thematic analysis, revealing seven interconnected themes. A prominent and deeply distressing theme was participants’ experiences of having their condition invalidated or regarded as ‘all in the mind’ highlighting widespread trivialisation and scepticism. Collectively, thematic findings revealed pervasive stigma and misunderstanding, which contributed to isolation, frustration, delayed access to care, and suboptimal healthcare experiences. Concurrently, themes of resilience, community support, and adaptive coping

strategies emerged as important protective factors, highlighting how PwPNES navigate and mitigate the impact of stigma and its associated challenges. Taken together, the findings of this study highlight the urgent need for greater awareness, education, and improved diagnostic procedures to support PwPNES, while advancing understanding of their lived experience. Efforts should address both neurobiological and psychological aspects of the condition, promote compassionate, patient-centred care, and strengthen social support. This should have implications for clinical practice, policy, education, and future research.

Keywords: Non-epileptic Attack Disorder; Stigma (Social Psychology); Medical Personnel; Patients—Experiences; Qualitative Research; Diagnostic Errors; Social Support

1. Introduction

Functional seizures, also known as psychogenic non-epileptic seizures (PNES), are convulsive episodes that mimic epileptic seizures but are thought to arise from psychological or emotional distress (Hingray et al., 2016). Like epileptic seizures, PNES are characterised by sudden and involuntary changes in motor activity, sensation, awareness, or responsiveness (Brown & Reuber, 2016; Reuber & Brown, 2017), but they occur in the absence of 'visible' structural pathology and epileptiform activity (Reuber & Rawlings, 2021; Szaflarski & LaFrance, 2018). As PNES do not conform to dominant medical models that privilege biomarkers and measurable evidence of disease, the condition is frequently construed as 'pseudo' or fabricated, undermining the legitimacy of individuals' suffering and lived experience (Myers et al., 2016; Rawlings et al., 2017; Stone et al., 2005).

PNES are characterised by fluctuating and variable symptoms which mimic those of seizures seen in epilepsy including full body shaking and episodic loss of consciousness. The highly visible disruption of seizure episodes juxtaposed with an invisible or poorly understood aetiology poses unique challenges for people with PNES (PwPNES). They are subsequently particularly vulnerable to delegitimisation and stigma. This study situates PNES in terms of epidemiology, individual and healthcare impact, conceptual and clinical challenges, and culminates in a discussion of stigma and invalidation.

1.1 Background

Living with PNES can have profound and multifaceted effects on individuals. Apart from disruption caused by seizure episodes, PwPNES often experience substantial functional impairment, along with myriad psychological, social, occupational, and fiscal consequences (Myers et al., 2016; LaFrance et al., 2008; Rawlings & Reuber, 2018). It typically presents in adolescence or early adulthood and affects predominantly female patients, with markedly high rates of psychiatric comorbidities, including depression, anxiety, and PTSD – and sometimes comorbid epilepsy (Rady et al., 2021; Reuber et al., 2003; Volbers et al., 2022, Oto et al., 2005). Seizure episodes are often unpredictable, occurring suddenly without warning. This, combined with a social misunderstanding of the nature of the condition contributes to experiences of loss of autonomy and isolation among PwPNES (Rawlings, 2017). The literature consistently reports a severely impaired quality of life among PwPNES, often to a greater extent than in people with epilepsy and other neurological conditions (Gagny et al., 2021,

O'Brien et al., 2009). Prognosis is mixed and long-term outcomes are often poor: While some individuals achieve remission or symptom reduction, others experience persistent seizures and an ongoing psychiatric burden (Gagny et al., 2021; Volbers et al., 2022, Durrant et al., 2011a).

While under-recognized, the condition is not considered rare. As reported by Bompaire et al. (2021), population-based estimates suggest that PNES have an annual incidence of approximately 1.4 to 4.9 per 100,000 individuals, and a point prevalence ranging from 2 to 33 per 100,000. Epidemiological data in Ireland are lacking, though available literature estimates the incidence of PNES as being 0.91 per 100,000 people per annum (O'Sullivan et al., 2007). Within specialised epilepsy care, up to 40% of adults with drug-resistant epilepsy receive a diagnosis of PNES while an estimated 30%, who are referred to specialised services for intractable seizures, are thought to be misdiagnosed with epilepsy (Bompaire et al., 2021). A small Irish study reported that 20% of patients referred to a tertiary epilepsy monitoring unit between 2003 and 2005 were diagnosed with PNES (O'Brien et al., 2009). PNES incidence may be higher than previously recognised due to misdiagnosis (Stack, 2022), which likely reflects a poor awareness of the condition as well as broad classification and conceptual challenges.

1.2 Conceptual challenges

The history of PNES is complex and fraught with debate, particularly regarding classification and nomenclature, reflecting one of the core issues in this field (Brown & Reuber, 2016b; Reuber, 2008; Stone et al., 2002). PNES is currently categorised as a functional neurological disorder in the *Diagnostic and Statistical Manual of Mental Disorders* (American Psychiatric Association, 2022) and a conversion or dissociative disorder in the *International Classification of Disease* (World Health Organisation, 2022).

Historically, PNES has been framed as hysteria or malingering, and terms such as 'pseudoseizures,' 'hysterical seizures,' or 'non-epileptic attack disorder' carry pejorative or misleading connotations (Rawlings & Reuber, 2018; Stone et al., 2005, Yeom et al., 2020, Edwards et al., 2012). Social and clinical discourse often continues to emphasise primarily psychological or affective underpinnings, which can result in doubt regarding the legitimacy of PNES as a 'real' condition (Foley et al., 2024). This perspective is likely reinforced by the frequent presentation of PNES with stress, trauma, anxiety, depression, and other psychiatric comorbidities (Rady et al., 2021; LaFranc et al., 2021).

Contemporary perspectives increasingly adopt biopsychosocial frameworks to explain the condition (Baslet, 2011; Brown & Reuber, 2016a). Although the aetiology remains controversial, neurobiological evidence points to functional alterations in brain networks associated with emotion regulation, motor control, and self-agency with abnormalities identified in regions including the amygdala, insula, and prefrontal cortex (Li et al., 2015; Perez et al., 2016; Szaflarski & LaFrance, 2018; van der Kruijs et al., 2012).

1.3 Clinical challenges

The aforementioned conceptual and classification challenges, combined with a poor awareness and misunderstanding of PNES, significantly complicate clinical practice and affect patient experience. The absence of consensus regarding whether PNES

should be considered primarily psychiatric, neurological, or psychosomatic contributes to suboptimal management across diagnosis, treatment, and ongoing care (Reuber & Rawlings, 2021; Avalos et al., 2020; Barsky et al., 1999; LaFrance et al., 2021; LaFrance et al., 2013). The patient journey is often lengthy and disappointing: PwPNES frequently present to emergency departments, undergoing repeated admissions, unnecessary neuroimaging, and prolonged antiseizure medication use before accurate diagnosis. For example, one study found that individuals with PNES had twice as many outpatient visits and hospital admissions compared to patients with epilepsy (Duncan et al., 2011, O'Brien et al., 2009, Kholi, and Vercueil 2020; McSweeney et al., 2017). In terms of diagnosis, video-electroencephalography (vEEG) is considered the gold standard diagnostic tool, but access to such assessment is limited, with many patients waiting years for clarity (LaFrance et al., 2013; Pretorius, 2016, Jones, et al. 2021). Average diagnostic delays are estimated at 7 to 10 years, contributing substantially to excess healthcare expenditure (Kerrr et al., 2016; Reuber et al., 2002). Misdiagnosis of PNES often results in iatrogenic harm through inappropriate treatment or delayed intervention (LaFrance et al., 2013).

In terms of treatment, while pharmacological interventions such as selective serotonin reuptake inhibitors (SSRIs) are primarily used to address comorbid psychiatric conditions, there is some evidence they may also impact seizure frequency (LaFrance et al., 2010; LaFrance et al., 2008; LaFrance et al., 2021; Baslet, 2015; Reuber, 2008; Beimer et al., 2022). Pharmacological interventions, uch as anti-seizure medications, are generally not recommended for PNES, but are sometimes prescribed in cases with co-occurring epilepsy, highlighting the need for careful assessment (Spierer & Herskovitz, 2025). Evidence largely supports multidisciplinary, non-pharmacological approaches, with cognitive behavioural therapy (CBT), trauma-focused therapy, and stress management shown to reduce seizure frequency and improve coping strategies (Goldstein et al., 2010; Goldstein et al., 2020). CBT has been associated with reductions in seizure frequency, as well as improvements in depression, anxiety, and quality of life (Tilahun et al., 2021; Kanner, 2003; Kamil et al., 2019). Positive outcomes have also been reported in complex cases, including adults with learning disabilities, demonstrating that tailored CBT interventions can be adapted for diverse populations (Radez et al., 2023). Unfortunately, many care models remain limited: trauma-focused or personalised approaches are often absent, standardised outcome measures are underdeveloped (Johnsen, 2020), and transitions from inpatient to outpatient care are frequently poorly coordinated. Consequently, patients often rely on informal or online resources to fill gaps in support (Baslet et al., 2016; Kerr et al., 2018).

1.4 Delegitimization and stigma

Living with PNES involves more than seizure episodes; it entails an erosion of identity, autonomy, and social participation. The poorly understood nature of PNES makes PwPNES particularly vulnerable to stigma. Recent evidence underscores the gravity of this issue: A survey found that 76.5% of individuals with PNES reported feeling stigmatised (Karakis et al., 2020; Colombo et al., 2025).

A substantial body of literature documents that PwPNES frequently encounter delegitimising attitudes and disbelief in both social and healthcare contexts (Rawlings & Reuber, 2018; Reuber & Mayor, 2012; Thompson et al., 2009). As mentioned, in social settings individuals often report profound isolation, diminished autonomy, and withdrawal from relationships due to unpredictability of seizures and societal misunderstanding (Rawlings, 2017; Rawlings & Brown, 2017). A meta-ethnographic,

systematic review by Foley et al. (2024) illustrates that delegitimation is a dominant form of stigma experienced by individuals with functional neurological disorder, the diagnostic category including PNES, and is manifest in social contexts as rejection, isolation, and workplace discrimination. Against this backdrop, some individuals find solace in online communities and advocacy groups which mitigate loneliness and offer contrary narratives to that of delegitimation (Foley et al., 2024; Szasz et al., 2025).

Overarchingly, stigma emerges as a central factor shaping individuals' experiences of their relationships and sense of belonging, and consequently, their concept of self (Szasz et al., 2025). Through repeated experiences of invalidation and stigma, individuals often internalise negative attitudes and disbelief, resulting in shame and silence. Eaves' (2024) interpretative phenomenological analysis of self-disgust in functional seizures illustrates how patients internalise negative judgements, developing feelings of being 'contaminated' or fundamentally flawed. The variable and concealable nature of the condition further amplifies identity-based stigma, in that PwPNES often do not present as ill according to conventional expectations. As O'Donnell and Habenicht (2022), and Quinn and Chaudoir (2009) argue, such processes are characteristic of concealable stigmatised identities, where the threat of exposure and invalidation continually shapes one's self-concept and behaviour. Similar patterns are observed in other concealable or 'unexplained' health conditions with poorly defined pathophysiology, including chronic fatigue syndrome/myalgic encephalomyelitis, fibromyalgia, and irritable bowel syndrome (Baloh, 2020; Kirmayer et al., 2004; Stone et al., 2005). In these conditions, invisibility and diagnostic uncertainty leave patients vulnerable to disbelief and moralising interpretations of their symptoms, positioning them as responsible for their own suffering.

In healthcare contexts, conceptual uncertainty manifests in strained patient-clinician dynamics (Reuber, 2008; Stone et al., 2005) which are further affected by patients' felt shame (Myers et al., 2022). PwPNES describe being treated as difficult, manipulative, or resource-wasting – perceptions that undermine therapeutic alliances and may result in inequitable care (Dickson et al., 2007; Kerr et al., 2016; Rawlings & Reuber, 2018). Clinicians frequently express negative attitudes towards PwPNES, and these views often persist even after diagnosis with patients describing feelings of abandonment and withdrawal of medical support once epilepsy has been ruled out (Green et al., 2003; Thompson et al., 2009). Consequently, PwPNES face protracted healthcare journeys marked by inconsistent care and lack of empathy which can exacerbate their psychological distress (LaFrance et al., 2013; Ludwig et al., 2018). This is concerning, particularly as evidence suggests that the stigma itself can heighten symptom severity, causing a self-perpetuating cycle of diminishing quality of life (Pick et al., 2019. Additionally, shame and self-disgust may function as barriers to therapeutic alliance, as patients may anticipate further invalidation and thus avoid disclosure or disengage prematurely from care (Myers et al., 2022, Schwars et al., 2022). Such findings underscore that stigma does not merely operate externally but is internalised in ways that erode identity, self-worth, and engagement with treatment.

1.5 Rationale and objectives

Taken together, the existing literature shows that stigma is a central and pervasive issue in the experience of PwPNES. Across social and clinical contexts, individuals with PNES frequently encounter disbelief, delegitimation, and negative stereotyping which amplify psychological distress, reduce quality of life, and impact socio-occupational functioning. Stigma is intertwined with conceptual ambiguities: Despite

growing neurobiological evidence that PNES occupies a liminal space between neurology and psychiatry (Anzellotti et al., 2020), and is often interpreted primarily as a psychological or functional problem, all of which reinforce perceptions that the condition is 'less real,' attention seeking, or self-inflicted. This contributes to diagnostic delays, and inappropriate medical interventions – suboptimal healthcare journeys. Collectively, this evidence points to a pressing need to address understanding of PNES with the aim of reducing stigma.

The purpose of the present research is to contribute to the existing body of literature on the lived experiences of PwPNES, raising awareness of the condition, and specifically highlighting the impact of stigma. More specifically, the objectives of this qualitative study are:

1) To explore how PwPNES perceive and experience societal attitudes towards their condition.
2) To explore their experiences of stigma, including the impact on mental well-being.

To explore how individuals adapt to societal perceptions or stigma, seek support, and manage their mental health.

2. Methodology

2.1 Design

An exploratory, qualitative design with online semi-structured interviews was used, with data analysed using reflexive thematic analysis (Braun & Clarke, 2019). This phenomenologically-oriented study explored the lived experiences of individuals with PNES with a focus on the social and psychological dimensions of living with PNES. In particular, it examined individuals' experiences of stigma. This approach was utilised due to its suitability for capturing the subjective experiences of each participant in depth. Ethical approval for this study was granted by the Dublin Business School Ethics Committee.

2.2 Sampling and participants

A purposive online sampling strategy was used to recruit individuals living with PNES between November 2024 and April 2025. Participants were eligible if they were adults (18 years or older) and living with either self-reported or formally diagnosed PNES. To reach the targeted population, the researcher shared the study online with various patient communities and advocacy groups on Facebook, Twitter, and Reddit. A total of six individuals (two male and four female) expressed interest and took part in the semi-structured interviews. No demographic data was formally collected.

2.3 Materials and procedure

Consenting individuals took part in a semi-structured interview conducted remotely, using the teleconferencing software Zoom. Prior to participation, individuals were provided with an information sheet outlining the purpose of the study and their right to withdraw at any stage. They were informed that the interview would centre on experiences of PNES and stigma and was expected to last approximately 45 minutes.

A semi-structured interview protocol (see Appendix A for more details) was developed and used. The interview schedule comprised 11 open-ended questions informed by

the research aims and previous studies on PNES. Questions were designed to explore the challenges and coping mechanisms of individuals living with the condition, with a focus on practical, emotional, and social dimensions. The interview commenced with a broad introductory question ('Can you start by telling me about your experience with PNES?'), with subsequent questions concerning sense of identity and self-perception.

The interviews were conducted in December 2024 through April 2025 and lasted from 28 minutes to 39 minutes in duration, averaging 35. All interviews were audio-recorded via Zoom, transcribed to Microsoft Word and anonymised to ensure all personal data were moved, after which recordings were discarded.

2.4 Analysis

Transcribed interviews were analysed using reflexive thematic analysis (Braun & Clarke, 2019) via NVivo 12 software (QSR International, 2018). This analytic approach is inherently interpretative and emphasises the active role of the researcher in gleaning meaning from the data (Braun & Clarke, 2019). Accordingly, the analysis involved collaborative discussion and reflexivity throughout to ensure a nuanced and transparent interpretation of participants' accounts. To ensure academic rigour and minimise the impact of personal assumptions and biases on the research process, reflective journals were maintained by researcher DK, and the process was discussed with the supervisor on an ongoing basis.

The analytic process followed six phases and was performed by DK with interpretations and findings discussed with supervisor NW. First, the analysts familiarised themselves with the data through repeated reading and discussion of initial impressions. Second, systematic coding and categorisation were conducted by DK and subsequently discussed with NW. Third, DK organised codes into potential themes and subthemes by identifying patterns across the dataset. Fourth, these themes were collaboratively reviewed and refined to ensure they provided an accurate and coherent representation of the data. Fifth, the themes were agreed, defined, and named. Finally, the thematic findings were written up by DK.

2.5 Reflexivity

As mentioned, the research employed a reflexive thematic analysis which acknowledges the impact of the researcher's positionality and perspectives on the research focus and process. The researcher and first author, DK, holds a higher diploma in psychology and is currently working towards a master's degree with an interest in neuropsychology with previous experience of PNES and the Irish medical system. NW holds a PhD in psychology and has a special interest in qualitative research of poorly understood chronic illnesses, including functional neurological disorder.

3. Results

Reflexive thematic analysis resulted in seven interwoven themes with 13 subthemes, as presented in Figure 1 and discussed below with illustrative quotes. These themes captured the complex lived experiences of individuals with PNES. Overall, participants' accounts were characterised by experiences of disbelief, dismissal, and emotional strain alongside a persistent struggle for validation. At the heart of these narratives

were negative encounters with healthcare professionals, societal misunderstanding of PNES, and a profound desire for recognition and support.

Figure 1. Thematic Findings

Theme 1. Being disregarded by the system

The first core theme concerns participants' experiences of feeling overlooked, dismissed, or inadequately cared for within healthcare systems. Participants often described medical encounters where the introduction of the term 'psychogenic' shifted clinical attitudes from concern to disbelief, leaving them feeling delegitimised. At the same time, systemic barriers such as long waiting times, limited expertise, and inaccessible treatment reinforced the perception of neglect. Together, these experiences highlighted how dismissal occurs both at the interpersonal level through the attitudes of professionals, and at the structural level through institutional shortcomings.

Subtheme 1.1 'They think you're making it up'

A dominant experience was the perception of dismissal by medical professionals, particularly once the psychogenic label was applied. For many, this shifted the clinical encounter from empathy to scepticism, as participants felt their symptoms were reframed as exaggerations or fabrications. This left them feeling delegitimised and profoundly invalidated. The continued use of terms such as 'pseudo-seizures' or 'conversion disorder' further compounded this, reinforcing a sense that their illness was not real. As Participant 1 summarised,

> They hear 'psychogenic' and think, 'Oh, you're making it up.'

Such encounters did not merely frustrate participants but actively eroded trust in healthcare, leaving them reluctant to seek further medical help.

> It's very hard to sit down and explain it to like a stranger or a doctor even because you feel like you won't be taken seriously and it feels really disheartening when people are like, well, do you take meds or can you take meds or what are you doing about it when there's not really anything you can do besides like get therapy and hope that it gets better? Like there's nothing more than that? (Participant 1)

Subtheme 1.2 Systemic failures and care

Beyond interpersonal dismissal, participants described systemic failures that perpetuated neglect. Long waiting lists, scarce PNES specialists, and financial barriers such as limited insurance coverage created a structural environment in which accessing care was almost impossible. Participants reported being prescribed psychiatric medication without clear explanation, further highlighting the lack of specialist knowledge. For some, this felt like a symbolic gesture of care rather than a genuine treatment plan, as Participant 3 noted,

> They were just like, 'well, here's a bunch of antidepressants.' Like, 'good luck, kid.'

These accounts suggested that systemic shortcomings are experienced not only as logistical frustrations but also as evidence of a healthcare system unwilling or unable to meet PwPNES' needs, reinforcing feelings of abandonment and marginalisation.

> I have not witnessed a single Doctor who whose bedside manner is appropriate for dealing with these kinds of patients. It's kind of disgusting (Participant 3).

Theme 2. The burden of being disbelieved

The second theme reflects the emotional and social consequences of disbelief. Participants reported being perceived as exaggerating, malingering, or seeking attention which not only shaped their clinical encounters but also filtered into their family, social, and community relationships. This disbelief was often communicated through stigmatising language and refusal to use correct terminology, producing feelings of shame, silencing, and isolation. The theme illustrates how disbelief became a pervasive burden that undermined participants' sense of self-worth and constrained their social worlds.

Subtheme 2.1 Stigma and misconceptions

Participants consistently highlighted disbelief and stigma as being central to their experiences. In both clinical and social contexts, PNES was framed as attention-seeking behaviour rather than a genuine health condition. Participant 3 described this bluntly:

> They think I'm just doing it for attention or something.

This pervasive stigma extended to language, where refusal to use the correct terminology (i.e., PNES) was experienced as deeply demeaning. As Participant 6 expressed,

> It's a seizure in every sense of the word and it's very demeaning… to tell them that it's not.

These accounts illustrate how disbelief becomes internalised, resulting in feeling shame. In turn, this social invalidation left participants feeling isolated, even within their own families where they reported rejection, minimisation, or avoidance of conversations about PNES.

> When you say psychogenic, there's just such a stigma with it. People think you're crazy That just psycho. I'm just hearing psychogenic anything to do with that word just

> automatically triggers that response and people, but trying to explain anything, any kind of mental disorder or there's, Yeah, there's judgement. Definitely. I definitely feel judgement. (Participant 6)

Theme 3. In search of credibility

Participants described a persistent struggle to establish legitimacy for their condition, particularly in medical contexts. A striking feature was the need to step into the role of educator, attempting to explain PNES to underinformed professionals. While this advocacy occasionally fostered a sense of empowerment, it was more often experienced as draining, disheartening, and unfair, highlighting the lack of institutional knowledge and training. This theme underscores the asymmetry of power in clinical encounters, where patients seek credibility in systems that offer little recognition.

Subtheme 3.1 Educating the professionals

Participants often found themselves forced into the role of educators, compelled to explain PNES to the very professionals tasked with their care. This reversal of roles underscored the lack of medical training and research, leaving patients carrying the burden of legitimising their own illness. For many, this advocacy was exhausting and disheartening:

> It's so under-researched and there's not a lot of people who specialise in PNES (Participant 6).

While some participants took pride in raising awareness, most expressed frustration that their credibility hinged on personal advocacy rather than professional recognition. This struggle illustrates a profound lack of balance between knowledge and authority, where patients sought legitimacy in a system that failed to provide it.

> I think educating yourself is a part of being a good healthcare professional and continuing to learn more. But I also think they should talk about it in school, even if it's not a lot. (Participant 2)

Theme 4. Emotional fallout

This theme captures the profound emotional toll of living with PNES, which participants described as both embodied and social. On a physical level, seizures were experienced as trapping and disempowering, leaving participants feeling disconnected from their own bodies. On a social level, disbelief and blame from others reinforced isolation and guilt. The result was an ongoing cycle of despair, frustration, and fear with participants struggling to maintain hope in the face of uncertainty.

Subtheme 4.1 Being Trapped in a Body

The emotional toll of PNES was described as deeply embodied, with participants framing seizures as imprisoning and disempowering. Seizures were not only unpredictable but also stripped participants of autonomy, leaving them feeling 'trapped' within their bodies which they could no longer trust. Participant 4 captured this poignantly:

> There have been a lot of days where I've felt very trapped in my own body.

This sense of entrapment affected not only the physical but caused emotional exhaustion, where daily life was shaped by uncertainty, fear, and loss of control.

Subtheme 4.2 Isolation and blame

The social consequences of PNES amplified this emotional burden. Participants described profound loneliness, often linked to the disbelief of others. Participant 3 noted:

> I still kind of feel like I'm alone.

Some reported being explicitly blamed for their seizures, reinforcing feelings of guilt and shame. This dual burden of internalised blame and external rejection contributed to an ongoing cycle of despair, in which participants oscillated between resilience and hopelessness.

> I'm not nearly as social as I used to be as far as like going out to places, I used to love. Do you know, go to the theatre, go to the mall, go walk around here, go to the I'm not like that anymore. I very much prefer to stay home because I feel safe at home. I know if I need to have a seizure or whatever I can get on the ground. We have dogs that are trained to like, wake me up to go get Dad. (Participant 4).

Theme 5. Negotiating credibility in society

Beyond the medical system, participants also grappled with societal misunderstandings of PNES. Media representations of seizures created rigid expectations of what a seizure 'should' look like, which contributed to disbelief when PNES presented differently. This misunderstanding extended into the workplace, where lack of accommodation and outright discrimination created barriers to employment and stability. This theme highlights how credibility was not only contested in healthcare but also negotiated in wider social and cultural contexts.

Subtheme 5.1 Media and misrepresentation

Participants linked public misunderstanding of PNES to stereotypical portrayals of seizures in film and television, where epilepsy was depicted narrowly and dramatically. When their own seizures did not conform to these expectations, disbelief followed. Participant 3 explained:

> A seizure looks like X, Y, and Z, and then you're presented with a seizure that doesn't look like that… it looks like some dramatic TV reenactment.

Such cultural scripts not only misrepresent PNES but also fuel stigma, as participants felt their condition was judged against inaccurate benchmarks.

Subtheme 5.2 Workplace struggles

Employment settings were described as particularly hostile, with participants facing discrimination, job loss, and difficulties maintaining stability. The invisibility and misunderstanding of PNES meant that workplace accommodations were rarely provided, forcing many out of jobs altogether. As Participant 4 recounted,

> I've gotten fired from a couple of jobs because I haven't been able to consistently go.

These accounts highlight how societal misunderstandings of PNES extend beyond cultural stereotypes to tangible socioeconomic consequences, exacerbating participants' marginalisation.

Theme 6. Finding strength through connection

Despite adversity, participants identified sources of resilience within their social worlds. Supportive family or friends provided validation and stability, serving as a buffer against stigma and disbelief. However, relationships were also strained or fractured, with some participants experiencing rejection or abandonment. For many, online communities and advocacy groups offered a crucial alternative space of

belonging, validation, and empowerment. This theme illustrates how connection, whether supportive or absent, was central to participants' ability to cope with the challenges of PNES.

> And like I said, that's what the support groups are for. And I think it's important to hold on to the supports that you have like to find friends and family that do support you and to like to grab on to that and realise like who in my life believes me and like really kind of let that blossom more. (Participant 5).

Subtheme 6.1 Supportive relationships

Despite adversity, supportive relationships were identified as vital lifelines. Participants described trusted friends or family members as sources of validation and stability in an otherwise invalidating landscape:

> She became my number one support system (Participant 4).

Such connections not only provided emotional relief but also mitigated the psychological burden of disbelief.

Subtheme 6.2 Strained and broken bonds

Conversely, others described how PNES strained relationships, leading to mistrust, rejection, or abandonment. Participant 1 reflected,

> It wrecked my relationship with quite a few people.

This breakdown of support reinforced participants' feelings of isolation and highlighted how stigma extended into their closest social circles:

> She had mentioned to me a little bit ago that after I started having them that we, she thought about breaking up with me because it was such a big shift because I went from being like normal for all intents and purposes to like having this debilitating like order. (Participant 6).

Subtheme 6.3 Community and peer support

Online spaces and advocacy groups emerged as crucial sites of solidarity, where participants felt seen, validated, and understood. For some, these communities provided not only emotional support but also a sense of agency and purpose:

> Well, I want to help others. I want to be of help. I don't want to be one that's, you know, chanting change but not doing anything about it (Participant 1).

These peer networks functioned as counter-spaces to the disbelief of medical and social worlds, offering participants a rare sense of belonging.

Theme 7. A confusing diagnostic journey

The final theme reflects participants' experiences of uncertainty and frustration in the diagnostic process. Participants' journeys towards diagnosis were often characterised by lengthy periods of medical uncertainty and misdiagnosis, and highlighted a core issue of poor continuity of care. A confusing and often invalidating diagnostic landscape deepened mistrust toward healthcare professionals and heightened participants' sense of invisibility.

Subtheme 7.1 Misdiagnosis and medical uncertainty

Participants' experiences of diagnosis were largely negative and typically involved a lengthy cycle of referrals between different specialists. Many described being "bounced" between neurologists and psychiatrists, with little guidance regarding their prognosis or next steps in diagnosis and treatment.

Participant 1 recalled:

> Every neurologist I've seen— 'Go see someone in psych.'

This culminated in a profound sense of being dismissed and rejected by individual clinicians, as well as more broadly by the healthcare system.

> Everyone was very dismissive. That's been kind of my experience with medical professionals in general throughout my time (Participant 1).

Such accounts often reflected the invisibility of PNES within medical practice:

> And medical professionals look at that and don't know what to do with it because that's not what a seizure is supposed to look like. (Participant 6).

Subtheme 7.2 The weight of language

As previously mentioned, participants frequently characterized labels such as "pseudo-seizures" or "conversion disorder" as misleading and experienced them as invalidating of their lived experiences. They often commented on how these terms were out-dated and inappropriate, and noted that some clinicians appeared unfamiliar with or unaware of the contemporary diagnostic designation of "PNES".

> And he's he was very snarky with me from that point on, but that's problematic, that medical professionals don't even know the proper terminology because it's demeaning to not even have it called by the proper term. (Participant 4)

The weight of this extended beyond personal distress and feelings of being dismissed but was also perceived as a barrier to care. Participants noted that some clinicians interpreted the labels as suggesting a lack of seriousness or urgency, thereby impeding access to support. As Participant 6 put it,

> I need help. I'm obviously here because I want help, and I don't need you telling me that there's nothing wrong.

Language, ultimately, became both a clinical and social tool of dismissal, leaving participants mistrustful of healthcare providers and uncertain about their own condition.

4. Discussion

The present study set out to examine the lived experiences of PwPNES, with a particular focus on how stigma is perceived and experienced, its impact on mental well-being, and the strategies individuals employ to adapt to and cope with it. The rich accounts of PwPNES illustrated the often-distressing nature of living with unpredictable and poorly understood symptoms. Moreover, they highlighted not only the direct impact of seizures on their daily lives but also the emotional, social, and systemic challenges that compounded their experiences. Accounts revealed how individuals struggled with the confusing and often invalidating diagnostic journey, the heavy emotional fallout of living with a misunderstood condition, and the disbelief and invalidation they encountered in both clinical and social contexts. At the same time, findings illustrated remarkable resilience: Despite the burden of symptoms and an ongoing fight for recognition and credibility, PwPNES also identified coping mechanisms and sources of strength, particularly through supportive relationships and

online communities. Taken together, the findings provide valuable insights into the multifaceted impact of stigma in social and healthcare settings highlighting a need for improved awareness, knowledge and understanding of the condition, as well as improved support systems for PwPNES.

4.1 Living with a stigmatised condition

As noted, a core finding was the profound impact on daily life, with participants reporting a marked loss of autonomy, anxiety about the unpredictability of their condition, and financial difficulties in securing appropriate care. The combination of these factors created a sense of powerlessness as individuals felt increasingly dependent on others while simultaneously unable to manage or predict the course of their own condition. This lack of control was a central theme in participants' narratives and significantly affected their overall well-being. This aligns with studies highlighting that lower perceived control is associated with poorer mental health outcomes and lower quality of life in chronic illness contexts (Connell et al., 2012; Wadsworth et al., 2020; Walther 2019; Walther, 2020).

The emotional burden of PNES emerged as a dominant thread, with participants frequently articulating experiences of guilt, hopelessness, and fear. Many described the stress of managing the condition as overwhelming, and stigma only intensified these emotions. The unpredictable and often uncontrollable nature of their symptoms, compounded by external misunderstanding, was linked to experiences of depression, anxiety, and emotional dysregulation. These mental health challenges frequently resulted in social withdrawal, as participants reported strained relationships and the loss of social connections due to misconceptions about their condition.

Coping mechanisms were varied and complex, ranging from therapy and medication to self-care strategies and engagement in online communities for support. Therapy, whether individual or in groups, was mentioned as an essential tool for some participants, helping them process the psychological trauma that often-accompanied PNES. However, participants also reported that dealing with the social stigma of their condition was a continuous challenge, making it difficult for them to fully trust others or feel comfortable seeking help. Self-care strategies such as mindfulness, relaxation techniques like breathing exercises, and pacing were also mentioned. However, their effectiveness was often limited by the unpredictability of seizures. Recent studies have similarly highlighted the benefits of therapy and multidisciplinary care in PNES management (Seyer et al., 2018; Stern, 2024; LaFrance et al., 2013), while also identifying barriers to trust in healthcare providers, including poor communication and perceived lack of expertise (Hatoum et al., 2022).

A key finding of this study underscores the significant influence of language on participants' experiences. Although considered preferable to terms like "pseudo-seizures," participants reported that the label "psychogenic", which is commonly understood as meaning "produced by the mind", was frequently misinterpreted by others to mean that PNES symptoms are imagined or under voluntary control. In their accounts, participants repeatedly expressed frustration with how psychogenic explanations of their condition were presented to them, feeling that these explanations often dismissed the legitimacy of their symptoms and invalidated their experiences. Some participants indicated that, although they could accept the psychological aspects of PNES, a focus on psychogenic explanations made it difficult to feel fully supported in treatment. It seemed that in some cases clinicians primarily concentrated

on the psychological component of PNES and were inattentive to the wider complex of symptoms. Consequently, participants approached healthcare with caution, which aligns with previous research, which illustrates how such psychogenic explanations can lead to a lack of trust in the healthcare system and poorer treatment outcomes (Krámská et al., 2021; Rawlings & Reuber, 2016; Reuber, 2008, McMillan et al., 2014). Additional studies have also shown that patients often perceive psychogenic explanations as minimising their lived experience, which can reduce engagement with recommended therapies and contribute to prolonged diagnostic uncertainty (Edwards et al., 2012; Goldstein et al., 2010). Given the persistence and impact of psychogenic explanations, the results suggest a need for greater sensitivity in how PNES is communicated and managed, ensuring that diagnostic language and clinical interactions do not inadvertently reinforce stigma or undermine patient legitimacy.

Patient narratives illustrated that their interactions with the healthcare system were fraught with difficulties. Long waiting times, misdiagnoses, and financial constraints were recurrent issues. Many participants reported struggling to access specialists or experiencing delays in receiving appropriate care; this aligns with prior findings that PNES patients often face prolonged diagnostic pathways and limited specialist availability (Bodde et al., 2009; Reuber & Mayor, 2012). A common experience shared by participants was being prescribed medications such as antidepressants or anticonvulsants without a thorough and proper assessment and monitoring, for instance through long-term vEEG (e.g., Gedzelman & La Roche, 2014). Medications, often accompanied by side effects, led to further frustration and feelings of disillusionment with the healthcare system, reflecting earlier work which has shown that inappropriate pharmacological treatment is frequent in PNES due to diagnostic uncertainty (Plug et al., 2009; Reuber et al., 2003; McMillan et al., 2014). Additionally, the findings highlighted the significant role that stigma plays in patients' engagement with treatment and patient-clinician dynamics. Disbelief and delegitimating by healthcare professionals, often rooted in their misunderstanding of the condition, ultimately added more distress. Previous research has similarly shown that stigma and negative attitudes among clinicians can exacerbate psychological distress, reduce treatment adherence, and contribute to social isolation in patients with PNES and related functional neurological disorders (Dickson et al., 2007; Kerr et al., 2018; Szasz, 1982; Roze, et al., 2023). As in other research, all too often, participants were told that their symptoms were 'all in their head.'

The accounts of PwPNES also suggested an internalisation of stigma. Participants often assumed negative societal attitudes into their self-concept, which led to feelings of self-blame, shame, and fear, all of which significantly impacted their emotional health and the way they interacted with their healthcare providers. This finding aligns with existing research on concealable chronic conditions which emphasises that stigma contributes to increased distress and poorer health outcomes (e.g. Quinn & Earnshaw, 2011; Quinn & Earnshaw, 2013). Importantly, participants consistently reported that both social and medical stigma contributed to heightened stress levels, which in turn worsened or triggered seizures. In this case, the psychological distress caused by the experience of stigma along with the fear of being misunderstood or dismissed, created a cycle in which stress and stigma fuelled each other. This aligns with other research on stress-related disorders, which suggests that stigma not only exacerbates emotional distress but can also contribute to physical symptomatology (Roberts et al., 2020). Interestingly, neuropsychological research also highlights how difficulties in emotion regulation are strongly associated with higher levels of

depression, stress, and anxiety in PwPNES (Testa et al., 2019; Research Gate A, 2025; Research Gate B|, 2025). An important implication of this is that interventions aimed at reducing stigma could directly improve quality of life by mitigating the distress that exacerbates PNES symptoms.

Together, these findings highlight the urgent need for enhanced psychological support and targeted interventions for individuals living with PNES. As suggested by other studies, there is a need for treatment approaches grounded in a balanced understanding of PNES, one that incorporates both psychological and neurobiological explanations (Baslet, 2011; Brown & Reuber, 2016a; van der Kruijs et al., 2012). Treatment adherence has been shown to improve when patients feel that both aspects are taken seriously in their diagnosis and treatment planning (Dimaro et al., 2014; McGonigal et al., 2019). Another important finding with implications for treatment in this study was the connection between trauma and PNES. Many participants noted that past trauma and abuse were significant triggers for their condition, consistent with previous research highlighting high rates of trauma history in PNES patients (Goldstein et al., 2010; Perez et al., 2016; Reuber et al., 2003). This underscores the need for trauma-informed approaches in treatment, where understanding an individual's trauma history is essential for providing care that is both compassionate and effective (LaFrance et al., 2013; Myers et al., 2022).

Accordingly, improving knowledge and understanding of PNES in both social and healthcare contexts emerge as a plausible strategy for enhancing patient outcomes. Many participants expressed frustration at the lack of basic awareness as well as specialised knowledge about PNES among healthcare professionals and the general public. Similar challenges have been reported in the literature on other poorly understood conditions which have historically been linked to hysteria (Asbring & Närvänen, 2002; Kirmayer & Looper, 2006; König, 2024; Engebretson, 2013). Thus, more progress in this domain is still needed.

4.1 Strengths and weaknesses

The present study has several strengths that advance understanding of the lived experience of PwPNES. First, the use of qualitative thematic analysis enabled an in-depth exploration of participants' lived experiences, generating rich and nuanced insights that would be difficult to capture through quantitative methods (Braun & Clarke, 2006; Braun and Clarke, 2019). The semi-structured interview format provided flexibility, allowing participants to share their experiences in their own terms and at their own pace, consistent with best practices in lived experience research (Smith & Osborn, 2015). Conducting interviews online also enhanced accessibility, reducing geographical and practical barriers to participation, a method increasingly recognised as effective in qualitative research (Gray et al., 2020). The reflexive approach to thematic analysis, with one researcher conducting the coding and subsequent discussion with a second researcher, enhanced sense-making and interpretation through collaborative reflection (Braun & Clarke, 2019). However, is it important to acknowledge that methodological strengths also pose a number of limitations. With regards to thematic analysis, the reflexive approach is sometimes critiqued for its inherent subjectivity, as themes are co-constructed by the researcher and shaped by their personal experiences, background and worldview Braun & Clarke, 2019; Byrne, 2022). While reflexivity is a recognised strength, it also raises the possibility that researcher assumptions and preconceptions heavily influence the interpretation of

data. As mentioned, efforts were made to reduce such bias through the use of reflective journalling and regular supervisory oversight.

With regards to participant selection and recruitment, a purposive sampling strategy was employed, with recruitment primarily facilitated through patient advocacy groups. While this approach successfully targeted individuals with lived experience of PNES and ensured engagement with an informed population, it also represents a limitation as the sample may not reflect those most severely affected by the condition, particularly individuals with limited access to support networks. While this sampling approach allowed for the inclusion of diverse perspectives, and the online interview format increased accessibility, the study also involved a relatively small sample of six participants, limiting the representativeness of findings. However, it is important to emphasise that this study sought to examine lived experiences in depth; thus, generalisability was not a primary aim (see Smith & Osborn, 2015). Furthermore, demographic and health-related data were not collected, restricting insight into how intersecting factors such as ethnicity, education, comorbidity, or socioeconomic status may have shaped participants' experiences. This can be addressed by incorporating larger and more diverse samples, gathering demographic data, and adopting a mixed-methods approach to enrich understanding of PNES experiences across different contexts.

4.2 Future research

Future research should aim to address the aforementioned limitations of this study, while expanding on its findings. For example, studies with a small sample size, but more in-depth interviewing while employing interpretative phenomenological analysis (Smith et al. 2009, Tindall, 2009) could be beneficial for a richer exploration of the different stigmas experienced by PwPNES, and in different contexts.

An interesting avenue for further research could be a longitudinal examination of how chronicity of illness relates to the impact of stigma, how individuals cope or adjust to stigma over time. Available literature highlights that quality of life remains markedly reduced among PwPNES, but this is particularly so among individuals with unremitting seizures (Ekanayake et al., 2021; Fiszman et al., 2004). Studies suggest that seizure persistence is common, with between 59% and 71% of patients continuing to experience episodes years after diagnosis (Reuber et al., 2003). Nuanced longitudinal research could therefore enrich the literature on stigma by considering the unique, age-related challenges faced by PwPNES with persistent seizures.

Ultimately, further biomedical research is needed to clarify the potential role of neurobiological mechanisms in PNES. Such research could refine diagnostic criteria, inform the development of targeted treatment approaches, and enhance understanding of the condition within clinical practice. Importantly, advancing neurobiological insights may also help reduce stigma and dismissal in healthcare systems that often prioritise demonstrable organic pathology over patients' lived experiences and self-reported symptoms. Addressing this gap is essential not only for improving clinical outcomes but also for validating the experiences of individuals living with PNES, thereby fostering more empathetic and evidence-informed care.

4.3 Implications and applications

The findings of this study carry significant implications for healthcare professionals, policymakers, researchers, and those directly affected by PNES. Given the lack of

knowledge and the delegitimating experiences reported by participants, there is a clear need for improved training among clinicians. Specialised education that addresses both the psychological and neurological dimensions of PNES could enhance diagnostic accuracy, reduce iatrogenic harm, and foster more empathic care.

Equally important is the integration of psychological support into routine clinical pathways. This study underscores the value of therapy-based interventions not only for reducing symptom burden but also for strengthening coping strategies and psychological resilience. Embedding mental health services into PNES care models would ensure a more holistic response, addressing both the physical and psychosocial aspects of the condition. Furthermore, participants highlighted the value of online communities and peer-support networks, which provided accessible spaces for sharing experiences, reducing isolation, and fostering empowerment. Such communities may complement professional care by offering practical advice and emotional validation, particularly for individuals who face barriers in accessing specialist services. While further research is clearly needed, the findings also underscore the importance of advocacy and targeted efforts to reduce stigma, raise awareness, and promote understanding of PNES among both healthcare professionals and the wider public.

Finally, at a policy level, the findings could inform advocacy for enhanced access to diagnostic tools, financial support for evidence-based interventions, and accommodations for those living with PNES. Public health campaigns and educational programs would also benefit from these insights, particularly in challenging misconceptions and improving inclusivity within social and occupational contexts.

5. Conclusion

This study has drawn attention to the profound impact of PNES on those who live with it, revealing how impacts of the condition extend beyond the clinical manifestations. Participants' accounts illustrated that the burden of PNES is not only medical but also deeply social, with stigma and delegitimation shaping daily life, self-concept, and experiences of healthcare. Living with PNES often entails the loss of autonomy, uncertainty due to the unpredictability of seizures and strain in relationships, alongside financial and occupational difficulties. These challenges are further compounded by experiences of disbelief and dismissal, particularly within healthcare settings, where inadequate knowledge and delegitimating responses remain pervasive. Such findings reinforce the argument that stigma is an important driver of the PNES experience. The way the condition is conceptualised, discussed, and managed within medical and social contexts directly influences treatment outcomes and well-being. Advances in neurobiological and biopsychosocial models are valuable and needed, they must be matched by parallel efforts to address the psychosocial dimensions of the condition. Progress requires sustained advocacy, greater awareness among professionals and the public, and the development of services that treat patients with compassion and legitimacy.

Appendix A: Interview Schedule

Semi-structured interview questions

1. Can you start by telling me about your experience with PNES? How did you first come to realise that you had the condition?
2. How do you think society generally perceives PNES? *What are some of the most common misconceptions you've encountered?*
3. How have these societal attitudes affected you personally? *Emotionally, socially, or mentally?*
4. How has living with PNES affected your sense of identity or self-perception?
5. What emotional challenges have you faced because of living with PNES?
6. What strategies or coping mechanisms have you developed to navigate the emotional impact of living with PNES?
7. How do your family members or close friends perceive your condition*? Do you feel supported or misunderstood by them?*
8. Have you experienced any changes in your relationships because of living with PNES? *For example, have you felt more isolated, or have your social connections changed?*
9. In what ways have you adapted to living with PNES? *How have you learned to navigate life with the condition?*
10. Do you think cultural or societal factors have influenced how you experience PNES?
11. How do you think societal understanding of PNES could be improved? *What changes would you like to see in how the condition is perceived or treated?*

Note: Due to the semi-structured nature of the interviews, not all interviewees were asked all eleven questions. However, care was taken to address all topics with the interview participants, following the sequence above. Probing or follow-up questions, italicised, were employed where appropriate.

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Making Feature Films As Part Of Higher Education Curricula: A Comparative Analysis

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Abstract

In recent years, a few film programmes at UK and Irish higher education institutions have attempted to produce feature length films (70+ minutes) as part of their curricula. This differs from the dominant approach of producing short student films, which usually require smaller crews. This paper compares five different models that have been used within the UK and Ireland that have successfully produced feature films as part of curricula, yet some of the courses no longer operate and it remains an uncommon method of film education. The aim is to address two questions: What are the different ways in which feature films have been made as part of higher education curricula in the UK and Ireland and what challenges may there be in the future when making feature films using this approach?

Keywords: Motion Pictures, British; Motion Pictures, Irish; Motion Picture Authorship; Motion Pictures in Education—Ireland; Motion Pictures in Education—United Kingdom

Introduction

This paper focuses on recent examples of where feature films (70+ minutes) have been produced as part of curricula within UK and Irish higher education (HE)

institutions. There are historical examples of feature films being made using this approach in the US. Nicholas Ray made *We Can't Go Home Again* (1971) with his students while teaching at Binghamton University. Brian De Palma directed *Home Movies* (1979) as part of a course at Sarah Lawrence College. Robert Altman made *Secret Honor* (1984) with students at the University of Michigan. In recent years, there have been various attempts in the UK and Ireland to produce feature films as part of HE curricula. But despite these attempts, it still remains an uncommon approach and has not transformed into a more mainstream practice. The dominant method of teaching and learning filmmaking in universities is still short films, usually with smaller crews.

There are various motivations for making a feature length film within educational curricula but all broadly attempt to bridge a gap between education and industry. It can be a way of addressing the 'missing middle' (Grugulis & Stoyanova, 2011) which emerged in the film and television industries where the freelance labour market led to a collapse of new-industry entrants learning from experienced crew members (Bechky, 2006). Another motivation is the lack of transparency and visible progression routes within the industry for micro-budget feature filmmaking (Fair, 2018). For example, now defunct developmental schemes like iFeatures, Catalyst Project, and Microwave – supported by Creative UK, the Irish Film Board, and Film London respectively – were extremely competitive to access and produced comparatively few films. Producing feature projects in an educational setting can create collaborative experiences that closer emulate the old studio model, closer to traditional craft apprenticeship. The projects can familiarise the students to the logistics of larger crews and higher specialisation of skills, which traditionally differ between academia and industry. Elsewhere, some HE institutions have welcomed a move towards student/staff co-creation of knowledge over traditional teaching; making feature projects can provide a platform for this.

This paper examines five HE institutions in the UK and Ireland where students have recently produced feature length films as part of their educational courses. Using comparative analysis, it is possible to examine a series of factors including curriculum size and structure, crew size and organisation, production budgets, staffing implications, ownership, and repeatability. The intention is not to evaluate the approaches to determine which are better or worse but to evaluate where there are similarities and differences, and establish what the challenges may be when trying to develop curricula around feature film production.

Existing literature in this field looks at the industry/education partnership models (Knowles, 2024; Mateer, 2018), work-integrated learning, and working practice principles of industry collaborations (Marshall, 2024). There are some examples that offer singular case studies of the feature film as a pedagogic practice (Bali & Pinto, 2018; Fox, 2018) but none have offered a comparative analysis of the ways in which different UK and Irish institutions have embedded feature film production into their curricula. This paper attempts to address this existing knowledge gap by addressing two research questions:

1. In recent years, what are the different ways in which feature films have been made as part of HE curricula in the UK and Ireland?
2. What challenges may there be in future when making feature films as part of HE curricula?

Methodology

Comparative analysis is a method of examining the different approaches alongside each other using a single set of identical criteria. Each approach will be presented and responses to the following questions will be established for each:

- At what level in the HE curriculum is the feature film produced? (using the UK scale of Levels 4–6 for undergraduate and Levels 7–8 for postgraduate)
- How, if at all, is the work assessed?
- How many students are on the production?
- What roles do the students take on in the production?
- Where does the script/budget come from?
- What, if any, is the industry involvement?
- How are academic staff involved?

This knowledge was built from first-hand experience, primary unstructured interviews, and secondary research. This is not an ideal methodological approach for collecting data for comparative analysis as it is unstructured and not collected in an identical fashion from each institution. However, the models did not all run simultaneously (they were in various states of operation between 2010-2025) and it is only in hindsight that it became apparent that these models shared the similarity of producing feature films as part of an academic course. Therefore, the methodology is flawed but has still retains some validity. The differing models will be presented anonymously and not associated with particular HE institutions. This decision is based on several factors. First and most importantly, it is not crucial to the research question. Second, it is to not judge one model over another. Third, as some of the courses are no longer running (sometimes for extrinsic reasons), it could be considered commercially sensitive.

It is important to note that the examples used here are not exhaustive. There are other examples of where feature films have been created as part of curricula which have been excluded for different reasons. Some are similar to examples already included, others differ in education level (e.g. secondary-level education) and therefore would complicate the comparison. All five models examined here have taken place from 2010–2025 at UK or Irish HE institutions.

For full disclosure and to acknowledge potential bias, it should be noted that the author has been directly or indirectly involved in three of these examples. This is a further reason to refrain from evaluating whether one model is preferable to another. Further examination of this area by more impartial researchers would be welcome.

The Different Models

This section addresses the first research question – examining the different ways in which feature films have been made as part of HE curricula in the UK and Ireland. It will briefly present the different models in relation to the questions identified in the methodology. Despite being presented alphabetically for the sake of comparison, they are in no particular order. All these models operated as part of degree programmes related to film.

Model A

In this model, students chose to produce feature films at Level 6, negotiated as part of their final project module. There were two features produced within one academic

cohort. In both cases the scripts were written by the students. The crews differed substantially in size. One was very lean, using five final-year undergraduates, the other was larger with more than 20 students from across different year groups, but with final year students in the key roles, with no industry involvement. The films were funded between the students themselves and crowdfunding that they carried out. Staff acted as supervisors to the academic element of the assessment, the same as other final-year projects of an undergraduate degree. The films were assessed in a 40-credit module, with an additional 20 credits for a separate project proposal. Each student was graded depending on their contribution and particular research element (e.g., cinematography or editing etc).

Although the model is open to students developing it into a feature film, very few have done so due to the volume of work involved, which overshoots the intended learning outcomes of the module.

Model B

This model is an outlier to the others; it is more ad-hoc, often extra-curricular, and not formally embedded or assessed within a curriculum. Essentially, feature films are being produced by various faculty members at the university, and students and recent graduates can apply to be trainees upon the projects. The number of students involved depends on the requirements of each project. The scripts came from industry or academic staff as well as from a production's Head of Department (HoD). Roles are filled by experienced staff. The films are funded through a mix of sources including industry funds, university contributions, and external investment. Recently a Level 7 curriculum was constructed to formalise this student/staff collaboration, but as it is in the first year of operation we cannot be certain of its outcomes.

Model C

This model was a Level 7 master's programme, delivered by an industry franchisee and validated by a university. The whole curriculum was structured specifically towards feature film production. Students were assessed across a variety of modules with individual negotiation, based on their specific experiences upon the collaborative feature project.

Industry provided scripts was also involved in the writing and development phase. The films were funded through a mix of crowdfunding and investment from the industry franchisee (effectively, a course materials budget). Academic staff acted as supervisors to the assessment while industry professionals provided training in production skills. The students were in all roles and would compete for the HoD roles through a series of competency exercises and pitches. There were 20–30 students within each cohort. Larger cohorts produced two features to maintain significant opportunities for each student. The programme is no longer in operation but produced nine features over six years.

Model D

This model used the same master's programme as Model C but operated at the validating university rather than at the industry franchisee. However, there were industry partners attached to the project who provided the script and key personnel. The funding varied between industry investment, crowdfunding, and research grants.

Like Model C, students were assessed across a variety of units, but in this case it was academic staff or industry practitioners in HoD roles, and the students would compete for other roles, often assisting the HoDs. There was also the opportunity for some undergraduates to apply to assist on the project, albeit in an extracurricular and unassessed capacity.

The cohorts were small, with 4–10 postgraduate students, with 10–30 undergraduate volunteers (depending on the project). Therefore, these projects drew from all academic levels of HE, from Levels 4–7. The programme made two features but no longer runs today.

Model E

The final model was embedded into a year-long, optional 40-credit module called 'Feature Film' at Level 5 (i.e. second year undergraduate). There were between 20–30 students on the module. Like Model C, students would compete for all roles upon the production through a mixture of competency exercises and pitches. There was no industry involvement – the script would come from academic staff and they would supervise the project through the usual module leadership. There were no budgets attached to the projects. The assessment was mixture of individual reflection and staff observation. The module no longer operates this way due to the parity of students' experiences being too varied, depending on their roles. To address this, attempts were made to produce anthology features – a series of short films stitched together to make a coherent feature narrative – but this has also stopped.

Discussion

In response to the first research question, it is clear from these different models that there are multiple ways to make feature length films as part of a HE curriculum. The commonality of the project size leads to some similar issues on each model, yet the different designs all have different emphases. These shall now be examined while addressing the second research question: What challenges may there be in future when making feature films as part of HE curricula?

Student-led or staff/industry-led

There is a continuum along which the projects are entirely student-led (Model A), entirely staff/industry-led (Model B), or a mixture of both. There is a difference in how student motivation may be accommodated between these different designs: they could express themselves with a larger project, or gain knowledge working alongside experienced practitioners. This difference needs to be articulated before the student takes the course, as they result in different learning experiences. There is also a staffing issue within each of these models. All exist because there are staff members who encourage such projects and may be unfazed by the process of making features. If the staff change institution, the course becomes problematic. Continuous feasibility is a challenge when trying to validate such modules or programmes.

Process or product

There is a question upon which these models sit: Is the emphasis on the process or product? Student-led projects tend to emphasise the academic process with the finished film being a by-product. Industry-led projects (especially those with external money) tend to emphasise the product, sticking closely to industry practice. Given that

all these models are supposed to be learning experiences, there is significant difference in how the learning is demonstrated or assessed. There is a question over academic rigour here too. What makes these experiences valid as undergraduate or postgraduate as opposed to an apprenticeship or traineeship?

To design or not to design?

One of the key differences between models is specific, feature film curriculum design versus ad-hoc, local solutions. For example, Model A has sufficient flexibility for a student to shoot a feature within the framework of the final major project, but it overshoots the module learning outcomes in some respects and doesn't meet them in others. In contrast, Model C is designed with only the feature film production in mind. Models A and B can be used on projects with different production demands and crew sizes, whereas others cannot. There are advantages and disadvantages to both, but again, it needs to be articulated to students enrolling on the course as they are very different experiences.

Emphasis on production over distribution or exhibition

Due to time constraints, each of the models focuses primarily on production over development, distribution, or exhibition. This is unfortunate as there are employment opportunities, including less precarious ones, in these roles too. In some ways the scope of the curriculum would become too large, and there are postgraduate degrees that only focus on these other stages. Nevertheless, a discourse between these different elements seems to be missing. Does this limit the ability of the films to go further in the marketplace? To what extent do students and the academic institution need the feature film do to well in the marketplace to bring validation and acclaim to the qualification?

Parity of student experience

A reoccurring problem within these different models is that the parity of student experience differs significantly depending on the role they have within the film. For example, a student that gets to direct is having a different experience from the person holding the boom microphone. The models also operate at different academic levels, sometimes using a combination in collaboration which can exacerbate the parity further. This problem doesn't disappear when experienced practitioners take the key HoD roles, as students will be in closer or further proximity depending on the role they take. Scaffolding this expectation is crucial here. If a student aspires to direct but isn't chosen, their motivation and engagement can drop. It is difficult to combat this within these models and perhaps explains why the short film format remains dominant in HE curricula and may remain so in future.

Conclusions and Recommendations

Feature films have been produced in different ways as part of HE curricula in the UK and Ireland. Some of the challenges they face are common, such as parity of student experience, whereas other issues are unique to their different designs. Film production courses face other challenges such as generative artificial intelligence, a volatile and unpredictable employment market, and uncertain sustainability of existing business models.

Optimistically, it could be argued that these models have the potential to offer some solutions and bring some stability to the marketplace. They could offer a much-needed training ground to discover and develop new talent and a visible progression route for new entrants to the industry. Conversely, some of these models can also be viewed as an exploitative inverse-apprenticeship, where students pay for the privilege of gaining experience on an otherwise commercial shoot. Questions also arise over ownership: Who profits if one of these movies does become commercially successful?

There is also the argument that university qualifications are primarily focused on individual endeavour rather than collective achievement. Although it is possible to create curricula that account for individual learner journeys while working as a collective whole, collaborative projects cannot always align. For example, time taken to perfect the cinematography or production design may impact on editing time. This problem arises in short film production but is much more pronounced in feature projects. If individual achievement remains at the centre of a qualification, the parity of student experience issue will always exist. One potential workaround for this would be negotiated curricula, where the students identify their own unique research problem within their role (e.g. Model A) However, this can be unpopular with students who prefer fixed learning outcomes and assessment and could be perceived as academic chicanery rather than developing a skill necessary for their careers.

There is a lot of scope for future research in this area. First, there is a need for more rigorous methodological approach towards documenting this process, but also micro-budget filmmaking more generally. It operates in an ad-hoc manner that does not get recognised or documented in trade papers or traditional industry spaces. Second, there is a narrative fallacy around filmmaking which tends to look at early-stage career success after someone has had industry success and does not account for all the work that does not break through. Looking ahead, in specific regard to the educational models that produce feature films, data could be collected and analysed in lots of different fields, such as student feedback, graduate career destinations and trajectories, and comparison to conventional film programmes with short productions. Ultimately it is not to determine a better or worse approach to filmmaking education but to reflect a diversity of approaches that can coexist and lead to a diverse film culture also.

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The Higher Education Colleges Association (HECA) Research Conference 2025, hosted at Dublin Business School, brought together presidents, academics, students, policy leaders and industry partners from across Ireland's independent and private higher education sector for two days defined by connection, critical reflection and research excellence. The conference opened the previous day with a workshop focused on the theme *'Unlocking research potential: building collaboration for impact'*. Led by our keynote speaker for the following day, Dr Tom Farrelly of Munster Technological University (MTU), the session provided an opportunity to explore and develop responses to the key challenges facing HECA research in the years ahead. The overall conference highlighted the sector's growing research culture and reinforced the important role HECA institutions play in Ireland's wider knowledge landscape. Our MC, Dr Kelly Hunnings, opened the day's programme by introducing Tim Bicknell, President of Dublin Business School, who welcomed delegates and set a warm, collegial tone for the day. This was followed by an address from Dr Marcella Finnerty, Chair of HECA, who spoke about the continued growth of research capacity across independent and private higher education and the sector's shared commitment to supporting both staff and student researchers.

Keynote Address

One of the most memorable moments of the day was the keynote delivered by Dr Farrelly, who offered a compelling and thought-provoking exploration of how generative artificial intelligence is reshaping research and academic practice. In his talk, 'Beyond the Algorithm: Redefining Research in the Age of Generative AI', he examined the rapid growth of AI, the shifting nature of scientific inquiry, and the need for researchers to protect human creativity, judgement and critical thinking in an age of automation. This talk was provocative and challenging to both boosters and critics of AI. His keynote resonated strongly with attendees and provided a powerful framework for the conversations that followed.

Technology and AI

The first morning session in the main room saw a wide variety of technology-focused presentations from across the HECA partners by both staff and students. The first two shared an interest in health data science, as Abhishek Krishna Pillai explored advanced EEG analysis through machine learning and John Lenehan probed microlearning and nursing education. The next three presentations delved deeply into computer networks with Dr Alexander Victor and Antonio Felipe Cora Martins, while Aswin Kumar Vyomakesan interrogated machine learning and AI potential in land

valuation. All-in-all, this was a wide exploration of the depth of computing research across our colleges.

Business and Sustainability

The presentations in this session explored the interplay between policy, technology, and organizational practice in driving sustainability, innovation, and efficiency across sectors. Jeanette Garcia Kola explored the question of whether or not Ireland's climate policies align with its position as a neutral donor. Through data analysis she hopes to fully answer the question in her ongoing research. Viridiana Monserrat's enlightening talk explored how company culture influences the handling of failure and the use of open innovation, and the specific challenges for small and medium sized companies. Norma Sanchez Morlaes discussed blockchain technology adoption at the product design stage, assessing how the technology could improve compliance, efficiency, and trust in new food product development at DigiFoods. She highlighted the usefulness of the Chroma model to assess company readiness to adopt blockchain technology. Xu Han's research looked at how the U.S. Nitrogen Oxides (NOx) Budget Trading Program affected companies' exposure to commodity price risks and their use of financial risk management tools, ultimately highlighting its success as evidenced by the data. Anesu Nyabadza discussed his project relating to sodium-ion batteries and the development of an AI system to assess quality on production lines. The research outcomes indicated that AI could manage all the steps in quality control workflow. This was an excellent session with a great diversity in terms of the themes and studies presented. The impressive quality of the research and the clarity with which the findings were communicated by all of the speakers were also at a very high level.

Education and Well-being

Greg Christodoulu's presentation on systemic failures in recording Affected Family Members in Ireland's addiction treatment was a powerful case for reform of our system. It made a very strong case that we undercount the recording of the harms caused by addictions (even excluding problem gambling, which does not have the same reporting requirements as substance abuse). The work presented could be expanded on in future outputs to allow the impressive detail of Greg's work to continue. Dr Andrew Wall compared the challenge of AI in learning, education and society to Plato's critique of Socrates' assertion that writing weakened reason. He argued that such transformation as seems inevitable needs to be wielded consciously, critically and ethically, being mindful of goals as Freire counsels, using Socratic dialogue to sharpen students' critical skills.

One of the joys of a multidisciplinary conference such as this is being confronted with worlds outside your experience, and Susan O'Brien's description of the burnout stress and burnout in clergy in Ireland generated a high level of empathy among attendees. Susan described how increasing burdens, including mental health care, declining public support, larger areas to serve, and fewer clergy created a familiar neoliberal cycle. Martin Nunan presented a strengths-based approach to positive reframing in the context of counselling supports for individuals who were experiencing anxiety and negative self-talk. His research compared two intervention groups - one group of students who received psychoeducation around positive reframing and one that did not - and found that the overall levels of anxiety and low mood were decreased for the reframing-trained students. A lively and engaged Q&A again could have run on for much longer but we had to return to the main room.

Panel Discussion

As part of the Conference theme, 'Thriving in the Digital Age: AI, Education and Wellbeing for a Resilient Ireland', the panel discussion, chaired by Dr Linda Butler Neff, focused on national policy, sectoral leadership, industry perspectives, and the student voice in shaping a coherent, future-ready research identity for HECA higher

education institutions. The discussion emphasised the importance of prioritising innovative research ecologies, alongside the need to develop strong, symbiotic relationships across HECA partners. Particular attention was given to extending these collaborations to students through collegial communication, shared support, and collective engagement in research among HECA partners.

The panel comprised William Beausang, Assistant Secretary, Research and Innovation Division, Department of Further and Higher Education, Research, Innovation and Science (DFHERIS); Dr Marcella Finnerty, HECA Chair and President Emeritus, IICP College; Dr Tom Farrelly, Munster Technological University (MTU); Hugh Sullivan, Director, Crowe Consultancy; Dr Julie Uí Choistealbha, Registrar, Hibernia College; Jeanette Garcia Kola, Griffith College Research Hub; and Kyle Quinn, Student Representative, Griffith College.

HECA Student Research Awards (HSRA)

The HECA Student Research Awards (HSRA) recognise excellence in student-led research across HECA member institutions, celebrating originality, methodological rigour, and applied impact across disciplines. The HSRA winners exemplified the conference theme, through research that was both academically robust and socially relevant.

This year's award recipients demonstrated a strong capacity to engage critically with complex contemporary challenges, including digital transformation, sustainability, wellbeing, and ethical innovation. Their work reflected a high standard of scholarly inquiry, combining theoretical grounding with empirical analysis and, in many cases, clear implications for policy, professional practice, and future research. Across diverse fields, the winning projects highlighted the central role of student research in advancing knowledge that responds to national and global priorities.

This breadth and quality were further evident in the top three awards, which recognised applied research from Rachel Purcell from Griffith College and Innopharma Education on anatomical modelling for medical device design; Hamza Razaq from Dublin Business School examining the integration of artificial intelligence in mental health practice; and a collaborative project from Ignacio Alarcon Varela and Bernardo Gandara of CCT College addressing digital trust through deep-learning methods for distinguishing synthetic from real images. Collectively, these projects illustrate the capacity of student researchers within HECA institutions to contribute meaningfully to innovation, professional practice, and emerging societal needs.

The awards underscore HECA's commitment to fostering a vibrant research culture that actively includes students as emerging scholars and collaborators. By providing

a national platform for dissemination and recognition, the HSRA continues to support the development of research capacity within HECA institutions and to affirm the value of student contributions to Ireland's evolving research ecosystem.

Further details and the full list of winners, recommended submissions, and the posters themselves are available on the HECA website: https://heca.ie/fifth-annual-heca-student-research-awards/

Student Well-being

The first afternoon session in the main room seemed to be the perfect exploration of issues core to staff across HECA colleges: student well-being. It opened with Dr Chris Gibbons exploring how students can go beyond just getting their marks and actually begin thriving. Arturo Vasquez Zepeda followed up with a thrilling discussion on how we can connect better to our students in the current digital upheaval. Arturo hit on the theme of empathy, which Caroline Bennis then followed up on in a scintillating discussion around empathy as a taught skill. The value of these discussions came to life again in the Q&A period as student well-being was discussed at length. The importance of these presentations and value of the subject matter shone through the discussions.

Technology, AI and Education

This afternoon session brought together researchers and practitioners from several disciplines, whose presentations showcased diverse perspectives on the growing presence of AI - particularly generative AI (genAI) - and machine learning (ML) in the research landscape. The capabilities, challenges and implications of the use of genAI and large language models (LLMs) in education were considered and discussed in the contexts of sustainable library support for genAI tool use (Trevor Haugh, Niamh McHenry, Amy Hayes and David Rinehart), creating multimedia educational resources using genAI tools (Nilay Udeshi), the challenges of genAI use for academic integrity in assessment (Dr Muhammad Iqbal), and the potentially deleterious impact of genAI upon scholarship and academia (Rob McKenna). The perspective of applied research, meanwhile, was ably represented by student projects on predictive models for monitoring weather anomalies (Fiona Behan) and coastal erosion (Manjula Vijayaraghavan), both of which demonstrated the potential of AI and ML as valuable tools for conducting environmental research. Discussion among participants and attendees in the Q&A session showed wide consensus on the need for an informed,

critical approach in our engagement with AI tools, while acknowledging the benefits that this technology can bring to research work.

Final thoughts

After four years, the HECA Research Conference has established itself as a significant platform for showcasing the breadth and quality of research across our institutions. It has also become a dynamic forum for generating ideas, strengthening partnerships, and advancing meaningful collaboration. The HECA Research Committee and Library Committee now look ahead with confidence and ambition to HECA 2026!

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