Exploring Social and Intellectual Isolation Among Postgraduate Researchers: Implications for Inclusive Teaching and Learning Initiatives

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Abstract: Inclusive teaching and learning initiatives aim to foster supportive environments that cater to students' diverse academic and social needs. Within the context of postgraduate research, students often confront significant levels of solitude, experiencing both social and intellectual isolation. While existing literature predominantly addresses social isolation, a distinct form of isolation inherent to postgraduate research, termed 'topic-related loneliness', has been largely overlooked. Despite its historical acceptance within academic culture, attrition rates of up to 70% point to the possible detrimental impact of isolation on student retention. Understanding the levels and determinants of isolation amongst postgraduate researchers is important for developing effective interventions. This study investigates whether social and intellectual isolation present prevalent challenges within the research community of a university in Ireland. The main aims are to understand the causes of research postgraduate isolation, explore potential links between isolation and attrition rates, and propose viable interventions, such as online communities of practice for researchers. To address these dimensions, the study adopts an explanatory sequential design, reframing the phenomenon of intellectual isolation within the context of inclusive pedagogy. Data collection includes a survey capturing the lived experiences of current and former research postgraduate students, followed by thematic analysis. Departing from traditional research paradigms, this sequential study integrates qualitative and quantitative methods, offering a nuanced understanding of the experiences and perceptions of postgraduate researchers. The findings aim to address existing deficiencies in research postgraduate education, elucidate the underlying causes of student challenges, and provide insights into proposed support systems and interventions that may be useful to university research communities, the development of higher education research policy, and the improvement of retention rates at research postgraduate level.

Keywords: Communities of practice, Knowledge sharing, Intellectual isolation, Postgraduate research, Inclusive teaching and learning

1. Introduction

Undertaking postgraduate research (PGR) at many universities can be confusing due to poor organisation and ambiguous guidelines (Mewburn, 2022, Gardner, 2009a). Consequently, postgraduate researchers (PGRs) may lack the necessary preparation or resources to handle the diverse demands of their academic programmes effectively (Hunter and Devine, 2016). Metcalfe, Levecque and Wilson (2018) suggest that there is a lack of clarity in the expectations for research students and PGRs do not associate themselves with the general student body. According to Mewburn (2022), many PGRs experience significant challenges navigating their PhD studies due to a lack of clear guidance and support structures. Similarly, Gardner (2009a) highlights the pervasive confusion among new PGRs stemming from poorly defined processes and expectations. Hunter and Devine (2016) suggest that the quality of the learning environment of PGRs can either foster well-being and success or lead to negative emotions and withdrawal. Communication breakdowns, inadequate feedback, and absent supervisors further exacerbate these issues (Buttery, Richter and Leal Filho, 2005). Mewburn (2022) describes her confusion and uncertainty in navigating her PhD, where she often had to seek out information to support her research education independently. This highlights a broader issue of inadequate support networks, and the lack of opportunities for building networks and connections further isolates PGRs (Sawir, et al., 2008, Janson, Howard and Schoenberger-Orgad, 2016). Ali and Kohun (2006) also identify communication issues as underlying causes of student isolation, emphasising the need for effective communication channels.

Completion rates for PGRs are generally accepted to be considerably lower than for undergraduate students. For example, Litalien and Guay (2015) found that attrition rates for doctoral students in North America are estimated at between 40% and 60% and Lovitts (2012) describes it as a silent epidemic in the United States. Bednall (2018) indicates even higher attrition rates at Australian universities and Jones (2013) cites international studies on PhD attrition rates at between 33% and 70%. Williams (2019) found that 26% of PGRs across 107 UK higher education institutions (HEIs) considered quitting. Ireland has no specific PGR attrition statistics, but the HEA is reviewing this. Most PGRs also take longer than the prescribed time to complete their degrees. van De

Schoot, et al. (2013) found that only 10% of PhD candidates in the Netherlands finish within four years, with an average completion time of five years. This suggests that many of the 10,500 PGRs in Ireland will not complete their degrees on time, and some never will. A 2021 HEA and Union of Students of Ireland (USI) survey revealed that 36% of PGRs were unaware of available supports, and 30% doubted they would finish on time (HEA, 2021). PGR numbers in Ireland are projected to grow by 30% by 2030, increasing challenges for HEIs and policymakers (Hunt, 2011).

Undertaking a PGR program is demanding, with significant levels of stress, compromised mental well-being, and burnout reported (Desa, Yusooff and Kadir, 2012, Kato, et al., 2019, McLaughlin and Sillence, 2018, Sawir, et al., 2008). Feelings of loneliness, caused by both social and intellectual isolation, can be significant contributing factors to these stressors (Conrad and Phillips, 1995, Crick, et al., 2021, Janson, Howard and Schoenberger-Orgad, 2016, Lee and Chan, 2007, Lewis, Wolff and Bekker, 2021). According to the Irish Higher Education Authority (HEA), PGRs who lack social connections are more prone to isolation and loneliness HEA (2021), and Sawir, et al. (2008) suggest that a lack of social networks exacerbates isolation. Unlike undergraduates, PGRs often engage in solitary research, and transitioning to an autonomous PGR setting can increase feelings of loneliness and detachment (Gardner, 2009b, Hunter and Devine, 2016). A HEA (2021) survey found that only 47% of PGRs regularly engage in research discussions with peers, and just 45% have someone to discuss day-to-day issues with. PGRs working from home or lacking a dedicated workspace experience heightened isolation and only 60% of PGRs in Ireland have adequate access to necessary on-campus resources, indicating a higher likelihood of isolation.

Postgraduate isolation and loneliness are well documented and often seen as inevitable parts of the research journey due to its autonomous nature (Lin and Huang, 2012, McLaughlin and Sillence, 2018, Sawir, et al., 2008). Ray, et al. (2019) surveyed 427 PGRs and found that up to 41% felt isolation and 50% experienced burnout. Lin and Huang (2012) found that PGRs who feel loneliness are more prone to experiencing burnout during the learning process. Investigations of the PGR experience have primarily concentrated on social isolation with limited exploration of intellectual isolation, although it is perceived as detrimental to PGR progress (Mills, 2002). Intellectual isolation is caused by a lack of intellectual stimulation, discourse, or engagement with knowledge-sharing opportunities (Mills, 2002). This form of isolation, called 'topic-related loneliness' by Sawir, et al. (2018, p.18) occurs when PGRs cannot discuss their study topics because of their novelty and unfamiliarity to others. As PGRs explore narrower fields, finding peers with similar interests becomes challenging, reducing opportunities for discussions and collaborations, which are essential for academic advancement (Pyhältö, Stubb and Lonka, 2009). Other factors that increase intellectual isolation include geographical separation and reduced availability to share ideas due to increased workload pressures (Mills, 2002). Social isolation significantly impacts PGRs' welfare and persistence (Ali and Kohun, 2006, Hawley, 2003, Lewis, Wolff and Bekker, 2021). The literature indicates that the combined effect of social and intellectual isolation harms retention (Valencia Quecano, Guzmán Rincón and Barragán Moreno, 2024), with higher attrition among female candidates (Lovitts, 2002). Isolation decreases academic achievement and damages mental health, reducing motivation and connection (Gardner, 2009b, Ali and Kohun, 2007). Addressing retention requires an understanding of the causes of isolation and developing comprehensive strategies to deal with the issues, including peer support, mentorship, and intellectual engagement opportunities.

Inclusive teaching and learning (T&L) initiatives design accessible and engaging educational environments for all students, regardless of background (Guimarães Junior, et al., 2023). These initiatives aim to eliminate exclusion by integrating students into regular educational systems and communities (Ioannidi and Malafantis, 2022). Strategies include active learning, diverse assessments, and collaborative learning support (Tinto, 2012). Universities should provide extensive support programs for PGRs to address social and intellectual isolation (Lovitts, 2002) by designing them around inclusive T&L strategies. Successful implementations at Columbia University (CTL, 2017) and Vanderbilt University (Greer, 2014) show peer mentoring and support groups reduce isolation and improve outcomes. Comprehensive training for supervisors, clear communication protocols, and structured support systems can also significantly enhance the PGR experience (Cekiso, et al., 2019). While autonomy is essential in research, community and peer engagement are crucial (Janson, Howard and Schoenberger-Orgad, 2016). Pyhältö, Stubb and Lonka (2009) highlight that the quality of PhD training depends on a supportive scholarly community. Organised student groups can reduce loneliness (Sawir, et al., 2008) and Vygotsky (1978) emphasised that learning is enhanced through social interaction and cultural context. Community inclusion fosters peer engagement and knowledge acquisition, boosting retention and satisfaction (Osterman, 2000, van Rooij, Fokkens-Bruinsma and Jansen, 2021), and promoting inclusive T&L initiatives is vital for PGR student success (Tinto, 2012).

University research offices support supervisors and PGRs by developing programs on research procedures but often overlook community-based approaches such as support and peer groups. Toneva, Doncaster and Bravenboer (2012) suggest that group learning is more effective than solo learning and establishing a community of practice (CoP) could be beneficial (Yusuf, et al., 2021, Janson, Howard and Schoenberger-Orgad, 2016, Wisker, Robinson and Shacham, 2007, Scott and Schofield, 2022). According to Rosaline (2020), CoP have the capacity to impact academic performance and enhance learning outcomes. CoP are based on constructivist learning theories and contextual learning (Lave and Wenger, 1991) and provide a platform for knowledge exchange and interpersonal contact (Bolisani, et al., 2020). These communities foster a sense of belonging and offer crucial emotional and intellectual support, helping PGRs who often work in isolation (Janson, Howard and Schoenberger-Orgad, 2016). Virtual CoP (vCoP) extend traditional CoP into the digital realm, using social media technologies for online interactions that surpass geographical limits (Corcoran and Duane, 2018, Murphy, 2016). These virtual communities enable collaboration and active learning at any time and in any place, creating inclusive and supportive learning environments and have the potential to reduce isolation and increase engagement among PGRs (Dawson, Heathcote and Poole, 2010, Guimarães Junior, et al., 2023). Understanding isolation factors is important for developing interventions to improve the PGR experience, and vCoP are seen as a promising solution (Spaulding and Rockinson-Szapkiw, 2012).

2. Research Design

The primary objective of this study is to investigate social and intellectual isolation among PGRs and propose possible solutions. The study aims to explore the link between perceived isolation and thoughts of leaving PGR education programmes and develop strategies to enhance the PGR experience. The research design combines an explanatory sequential approach and thematic analysis. Explanatory sequential research is a design combining quantitative and qualitative methods. It begins by collecting and analysing quantitative data to provide a broad understanding of the research problem and identify key areas that need deeper exploration. Qualitative data is then used to further explore the quantitative findings. This methodology is especially beneficial where initial quantitative findings require additional investigation (Creswell and Creswell, 2017, Plano Clark, 2017, Ivankova, Creswell and Stick, 2006). This study commences by gathering quantitative data through surveys and the analysis aims to discern patterns in the data (Creswell and Clark, 2017). Following a comprehensive analysis of the survey data, qualitative data will be gathered using semi-structured interviews. According to Ivankova, Creswell and Stick (2006), this phase offers a contextual, comprehensive, and profound comprehension of the quantitative findings. The data will be evaluated using thematic analysis to discover themes that provide explanations or further insights into the quantitative findings (Creswell and Clark, 2017). The qualitative analysis results will be combined with the quantitative data and this integration facilitates verifying and enhancing the quantitative findings with qualitative observations (Hanson, et al., 2005).

Thematic analysis is a qualitative research technique employed to detect, analyse, and report on recurring themes present in data. The method is versatile and valuable for interpreting the viewpoints of various research participants, emphasising commonalities and disparities, and may produce unexpected findings. The researcher engages with the data, carefully studying and reviewing it to comprehensively understand its content (Braun and Clarke, 2006), where themes emerge as data is systematically categorised (Jones, 2013). A theme encapsulates a significant aspect of the data concerning the research topic (Boyatzis, 1998). The last stage involves integrating the analytical narrative with data extracts to construct a logical and compelling account of the data and presenting a persuasive argument (Braun and Clarke, 2006). This study integrates the breadth of quantitative analysis with the depth of qualitative insights by applying the explanatory sequential technique and thematic analysis. As a result, the research design will provide a platform for a thorough understanding of the research problem. By integrating numerical data on isolation with detailed qualitative narratives of PGRs' lived experiences, the study explores the extent of isolation, the underlying reasons, and the contextual factors contributing to it. Taking this holistic approach allows for a nuanced perspective on complex issues, a richer interpretation of the data, and more robust conclusions.

A survey instrument was designed to collect data on the prevalence and nature of social and intellectual isolation among PGRs at a university in Ireland. A comprehensive investigation of validated scales on isolation is detailed in Table 1 and the survey includes questions from these standardised measures, some of which have been modified to assess levels of PGR isolation. The survey was distributed electronically to current PGRs and staff who have completed PGR education. An incentive to participate was offered both to increase response rates and to reduce any potential bias that may be introduced by the increased likelihood of those who feel strongly about the core issues to respond. The data was cleaned to reduce errors in reporting, converted into a numeric

format, coded, and analysed. The quantitative phase is complemented by thematic analysis to understand the underlying reasons and implications of the phenomenon of PGR isolation (Pearse, 2019).

Table 1: Validated Scales Mapped to Survey Questions

Citation	Scale	Question from Paper	Survey Questions
Tarazona-Santabalbina, 2016	**Duke Social Support Index-10**	Duke Social Support Index-10	11. How often are you in contact with peers in TUS - including all campus locations (online or in person)?
Chan, 2017	**Lubben Social Network Scale-6**	How many relatives/friends do you see or hear from at least once a month?	
	De Jong Gierveld Loneliness Scale	"There are plenty of people I can rely on when I have problems"; "There are many people I can trust completely"; and "There are enough people I feel close to."	12. There are people I know who I can talk to about my research.
	Revised Social Support Questionnaire (SSQ6)	"Who can you count on when you need help?"	
Pynnonen, 2018	**Social Provisions Scale**	Scale from 1 (strongly disagree) to 4 (strongly agree). Larger final score indicates greater degree of perceived support. Examples of statements include: "There are people I know will help me if I really need it"; "I have close relationships that make me feel good"; and "I feel a strong emotional tie with at least one other person."	
Pynnonen, 2018	**Measure for loneliness**	Participants were asked "Do you feel lonely?' Answer options were: very rarely or never, sometimes, and often or almost always	17. Do you experience (or have you previously experienced) intellectual isolation/loneliness as a research postgraduate? 20. Do you experience (or have you previously experienced) social isolation/loneliness?
	Social Provisions Scale	24-statement scale, split into six dimensions: attachment, social integration, reliable alliance, guidance, opportunity for nurturance, and reassurance of worth	15. How often are you in contact with peers in TUS including all campus locations (online or in person)?
Coll-Planas, 2017	**Subjective Social Participation Index**	Do you find it easy to make friends?	14. Do you find it easy to make friends?
Phinney, 2014	**Multidimensional Scale of Perceived Social Support**	Statements in the family factor group include: "My family really tries to help me"; "I get the emotional help and support I need from my family"; "I can talk about my problems with my family"; and "My family is willing to help me make decisions." Statements in the friend factor group include: "My friends really try to help me"; "I can count on my friends when things go wrong"; "I have friends with whom I can share	18. What do you think the reasons are? (Pick as many as you like) 19. What do you think the reasons you do **NOT** feel isolation/loneliness are? (Pick as many as you like)
Bartsch, 2013	**Care Manager Survey**	The survey measured five potential isolators: emotional disturbance, cognitive impairment, *social isolation*, physical impairment, and economic disadvantage.	
Coll-Planas, 2017	**Subjective Social Participation Index**	This study used to the four questions asked in the social participation factor: During the week and on weekends do you call other people to go outside? Do you go to any park, association, or home of the pensioner (retirement home) where you relate to other elders? Do you like to participate in leisure activities that are organised in your neighbourhood/town?	21. What do you think the reasons are? (Pick as many as you like) 22. What do you think you do **NOT** feel social Isolation/loneliness? (Pick as many as you like)

Qualitative data will be collected through semi-structured interviews with a subset of survey participants. Purposive sampling will be used to select PGRs with diverse experiences of social and intellectual isolation, a method commonly used in research to choose participants based on specific characteristics relevant to the study's objectives. It involves intentionally selecting individuals or groups with particular traits or experiences to provide in-depth insights (Palinkas, et al., 2015). Interviews will be conducted in person or via video conferencing, allowing for a rich, in-depth exploration of participants' experiences, perspectives, and coping strategies. Qualitative data from interviews will be transcribed and subjected to thematic analysis, which identifies recurring themes and patterns, providing a nuanced understanding of the challenges faced by PGRs.

The study is based in an Irish university and spans a period during which two institutes of technology (AIT and LIT) amalgamated to form a new technological university (TUS). A vCoP for PGRs was established at LIT in 2022 with 45 members. The community was hosted on Microsoft Yammer, but technical issues arising from merging the institutes' domains led to the deletion of the online community. However, the vCoP demonstrated some success, with participants forming personal and professional connections, using Microsoft Teams and face-to-face meetings to create smaller, informal communities for research activities and discussions. The final phase of the research involves the establishment of a pilot vCoP for PGRs in TUS. The implementation strategy for the vCoP involves developing an online platform tailored for PGRs, facilitating regular virtual meetings and discussion forums, providing training for PGRs on effective online engagement, and monitoring and evaluating the impact of the vCoP on reducing isolation and improving academic outcomes. Regular evaluations will be conducted to assess the effectiveness of the proposed interventions. Feedback will be collected through follow-up surveys and focus groups, allowing for continuous improvement of the support systems in place. The goal is to provide valuable insights to research communities, influence research policies, and improve the PGR student experience and retention rates.

3. Findings

Pilot surveys were conducted at the European Conference of Social Media (ECSM) in 2022 and LIT in 2023. During a presentation at ECSM 2022, attendees participated in a survey using Mentimeter, polling software that facilitates participation in real time polling activities using a mobile device. Microsoft Forms was used for the LIT survey and emailed to PGRs, with 32 responses. A more extensive survey was conducted in the new university

in 2024 and received 301 responses from individuals who had completed or were currently engaged in PGR programmes.

The survey results align with the literature which highlights a significant level of both social and intellectual isolation among PGRs, demonstrating that isolation is widespread and impactful, and the consistent reporting across different groups underscores the pervasive nature of the problem. The survey data indicates a consistent pattern where many PGRs experience isolation, with intellectual isolation being more dominant. For instance, the ECSM 2022 survey found that 62% of participants experienced isolation, with intellectual isolation predominant (see Figure 1). The LIT survey showed that 78% of PGRs felt social isolation, and 82% felt intellectual isolation. The TUS survey revealed that 51% of PGRs felt social isolation, and 61% felt intellectual isolation (see Figure 2).

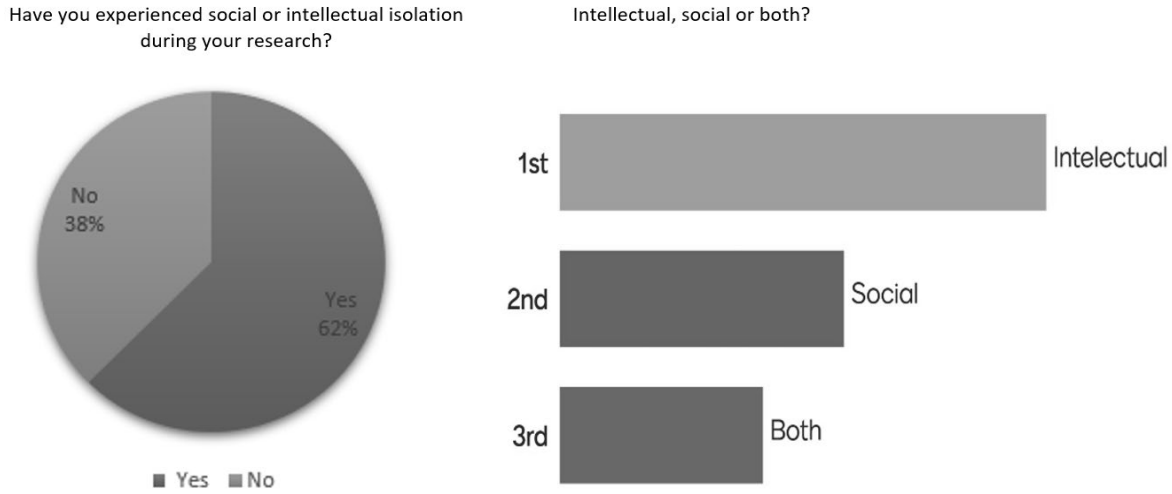

Figure 1: ECSM Survey Results

In the TUS survey, participants who thought about leaving their studies cited several reasons, such as burnout and fatigue, stress, work-life balance, lack of finances, and loneliness and isolation, suggesting that a combination of issues may impact on PGRs intention to complete. Lin and Huang (2012) show that loneliness and academic burnout are connected and negatively affect the student experience. 60% of PGRs had considered leaving their studies, which is comparable to attrition figures in the literature. Among those contemplating leaving, 28% reported intellectual isolation, and 21% reported social isolation. This equates to 49% who felt isolated and thought about leaving their studies. In addition, 20% of those considering leaving also experienced both social and intellectual isolation, suggesting that isolation is a significant contributing factor to PGR attrition (see Figure 2).

PGRs were asked to rate the level of isolation they felt on a Likert scale from 1 (not at all) to 5 (very isolated). The average rating for social isolation was 3.59, and the average for intellectual isolation was 3.63 (see Figure 3). Figure 4 illustrates factors that influence feelings of isolation, reflecting the need for connection, belonging and a sense of community. PGRs who reported no isolation cited good support networks, regular interactions with staff and PGRs, and a strong sense of community. These interactions provide opportunities for feedback, collaboration, and social engagement. In contrast, PGRs who felt isolated mentioned a lack of support networks, limited interactions, and no sense of community as major contributors to their isolation. Without a network of peers and mentors, PGRs may struggle to find the necessary support and encouragement. The survey results indicate that supportive supervision is important in mitigating intellectual isolation and this is comparable with the findings of Bednall (2018). 33% of PGRs indicated that having a supportive supervisor and adequate interaction time significantly reduced their feelings of intellectual isolation. This underscores the importance of supervisory relationships in providing guidance, feedback, and encouragement, positively impacting PGRs' education and experience (Bednall, 2018).

Figure 2: TUS Survey Results – Isolation and Thoughts of Leaving

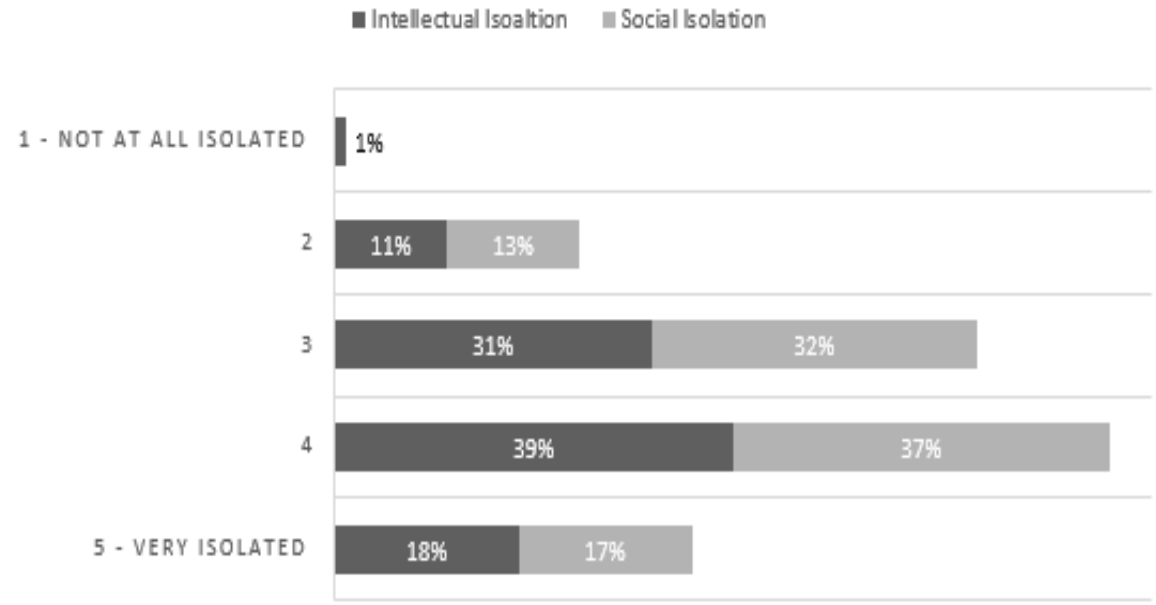

Figure 3: TUS Survey Results – Levels of Isolation

Implicit isolation while conducting research is generally expected and often dismissed as a rite of passage in academic culture. However, over half of those surveyed experienced loneliness because of the independent nature of research, and 81% felt included and connected when they were part of a research group. Several strategies to alleviate isolation were proposed by respondents, including a desire for in-person events (44%), an available PGR community (43%), opportunities to meet other students (40%), more collaborative work (37%), and more specific PGR clubs and societies (35%). These suggestions indicate that collaborative environments and group activities may reduce isolation and improve the PGR experience. Establishing a vCoP for PGRs to provide a space for academic discussions, peer support, knowledge sharing, and professional growth is one way of addressing these needs.

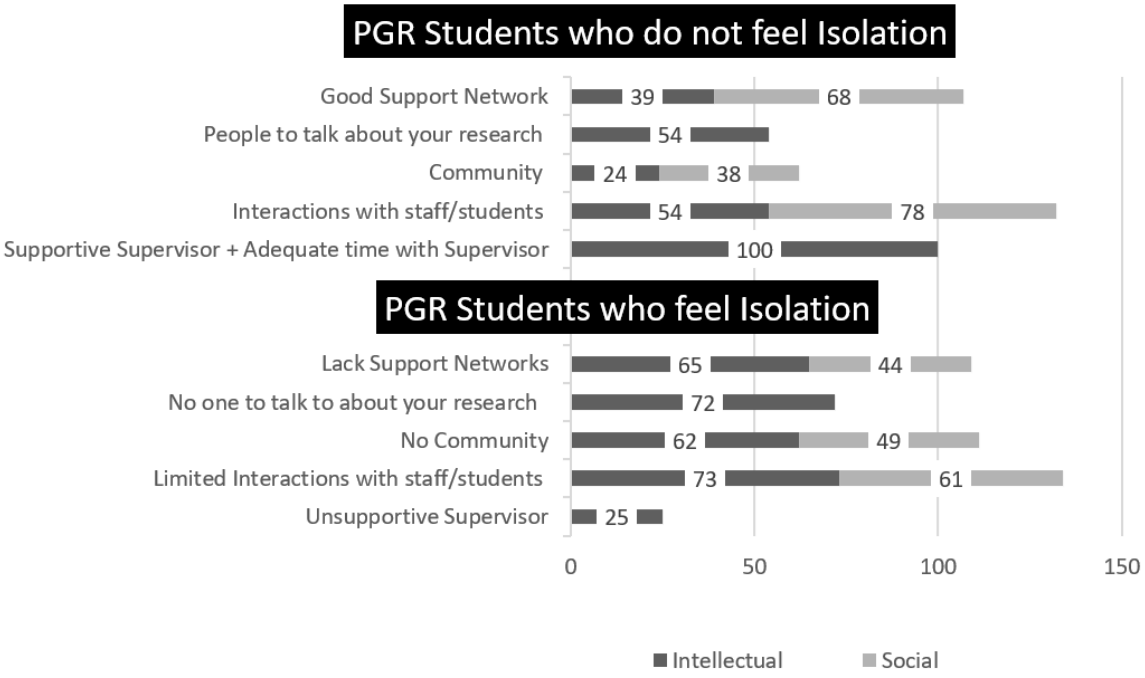

Figure 4: TUS Survey - Factors Influencing Isolation

4. Conclusion

This study examines the pervasive issue of isolation among PGRs, focusing on its social and intellectual aspects, and its impact on academic success and attrition. The findings point to a possible link between burnout, isolation, and high attrition rates, with intellectual isolation, or topic-related loneliness, being a particularly unrecognised, yet detrimental, factor. By addressing the causes of isolation and implementing comprehensive support programs, HEIs can significantly enhance the educational experience of PGRs and the findings may provide guidance for HEIs to formulate effective research policies and support systems. The findings advocate for innovative, inclusive T&L initiatives and community-based approaches, such as online communities, to foster a supportive research culture that can alleviate isolation, and which may positively impact attrition rates. This study contributes to the broader discourse on PGR education by highlighting the important role of inclusive educational programs in addressing isolation. The findings may inform practice, policy, and further studies, helping to create a more inclusive and supportive environment for PGRs. As the postgraduate journey continues to evolve and the number of PGRs increases, HEIs must explore and implement strategies that support student engagement, satisfaction, and retention, thereby improving the chance of academic and personal success. Although the study is conducted within the context of a single technological university in Ireland, the findings may be generalizable to similar institutions in Ireland and other jurisdictions. Future research that replicates the study in diverse educational contexts, such as universities in other countries or institutions with different academic cultures, and at a larger scale, would provide a more comprehensive understanding of PGR experiences.

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