A content analysis of tweets on toxic doctoral supervision

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Abstract

Doctoral students are expected to conduct independent research and produce original contributions to their field of study. Therefore, doctorate programmes are rigorous and demanding, and they require a significant amount of dedication and hard work. High attrition and dropout rates generally mark the post-coursework phase of the programme because of the difficulties that go with the independent research aspect of the study. Supervisory practices are identified as major reasons for the discontinuance of these programmes. The purpose of this study was to identify the nature of communication on toxic supervision of PhD students by Twitter users. The data collection consisted of tweets posted between January 1, 2020, and March 12, 2023. The methodology used was content analysis, which included the examination of the tweets for themes and trends collected within the time frame. It provides valuable data on the lived experiences of PhD students under toxic academic supervision. This study reflects the value of Twitter as a tool for research and as a medium of expression and emotional support for PhD researchers. The study will contribute to policy-making and training in supervisory practices.

Introduction

The purpose of a PhD programme is to provide students with the opportunity to undertake original research in a specific field of study and make a significant contribution to the existing body of knowledge. PhD programmes are designed to equip students with advanced research skills, critical thinking, and analytical abilities to become independent researchers and scholars in their field. During the dissertation phase, a supervisor is assigned to the student to offer guidance in creating an original research output in the form of a thesis or dissertation. Thus, "a professional contract akin to an apprenticeship" is established between the two (Jabre et al., 2021).

Doctoral programmes span between three and four years, and are usually completed in two main phases, the coursework component of about one academic year, and the dissertation component of about two years. It is typical for students to complete the coursework part of their postgraduate studies on time, but then struggle for years to finish their thesis (Costa, 2018). This difficulty leads some students to give up altogether, resulting in a lack of formal qualification after many years of wasted rigour and stress. Across universities, there is a high rate of PhD students' dropout, sometimes between 36% and 51% (Young et al., 2019; Payne, 2021). Effective supervision is crucial to the success and quality of postgraduate education. Several studies have shown that the quality of supervision can have a significant impact on timely completion rates, research quality, student satisfaction, and retention rates (Alam et al., 2013; Gruzdev et al., 2020).

The findings of this study hold significant implications for policy-making and training initiatives aimed at improving supervisory practices within academia, ultimately contributing to the overall well-being and success of doctoral students.

Literature review

The working relationship between the supervisor and supervisees is well-researched due to its strategic role in the success rate of PhD programmes. Supervisors hold explicit authority which is typical of hierarchical power dynamics. Power imbalances inherent in these relationships can lead to complications, thus, a nuanced understanding of the power dynamics between PhD students and their supervisors is desirable. Brookfield et al. (2022) highlight Foucault's (2000) crucial insights into power dynamics within academia and their relevance for ethical teaching. Foucault's analysis reveals the pervasive nature of power, particularly through disciplinary and bio-power. These could turn lifelong learning into a daunting experience akin to a 'lifelong nightmare'.

Effective supervision of students helps ensure that they are developing the necessary knowledge, skills, and attitudes to meet the requirements of their research project and achieve their final goals. A toxic or abusive working relationship between supervisors and their supervisees would have a direct impact on students' capacity to complete the many tasks that culminate in the completion of the programme and graduation. Educational institutions often resemble tightly controlled systems, mirroring prisons in their constraining structures. Thus, teachers must be vigilant of power dynamics among both themselves and students, as differences in status and privilege are imported into the classroom environment. Foucault's insights support the imperative for educators to navigate power dynamics conscientiously to uphold ethical teaching practices (Brookfield et al., 2022).

In examining the lived experiences of doctoral students, Al Makhamreh and Stockley (2020) review the nature of mentorship and identify three levels, namely: authentic mentorship, average mentorship, and toxic mentorship. Students who experienced inadequate or detrimental mentorship were likely to feel stressed and emotionally drained.

A toxic relationship is characterised by high levels of physical or emotional stress, lack of communication, bullying, a lack of respect for boundaries, and a lack of appreciation in the working relationship. In a toxic relationship, the unhealthy nature of the power dynamics is generally observable. In a thematic analysis of the behavioural characteristics of toxic research supervisors, Shahnawaz and Siddiqi (2022) taxonomised the traits as oppressive management style, misuse of authority, inadequate guidance, and erratic emotions (primary characteristics); and inadequate capacity to interact, low level of competence and high level of prejudice and bias (secondary characteristics).

Similarly, Gruzdev et al. (2020) carried out a survey involving PhD students at top-rated Russian universities to categorise supervision styles and examine their impact. Using cluster analysis, six styles were identified: superheroes, hands-off supervisors, research advisors, dialogue partners, research practice mediators, and mentors. Hands-off supervisors provide little guidance, resulting in the lowest student satisfaction and longest expected time-to-degree. However, many students with hands-off supervisors were still satisfied, suggesting a "disengagement compact" between students and supervisors. The styles with the highest satisfaction and shortest expected time-to-degree were superheroes and mentors, who provide managerial and expert support. The students indicated that performing administrative and advisory functions was critical for effective supervision and student progress.

Submissive individuals in toxic relationships often experience feelings of being unappreciated, misinterpreted, undervalued, and sometimes even subjected to mistreatment. Such relationships can harm the mental and emotional well-being of the subordinate individual. Al Makhamreh and Stockley (2020) suggest that doctoral students can complete their studies despite facing toxic mentorship, but this achievement may come at the cost of their mental and emotional health. Shahnawaz and Siddiqi (2022) identify low levels of self-disclosure and a poor sense of identification with their peers as some of the characteristics displayed by doctoral students in India.

Aside from the supervisor-student relationship, supervisory practices may be affected by other factors. For instance, supervisors may have difficulties with the intellectual and

psychological components of the postgraduate programme. They may lack sufficient research knowledge and abilities to facilitate supervision. There may also be a mismatch between the student and his supervisor (Priyadarshini et al., 2022; Muraraneza et al., 2020).

As further noted by Priyadarshini et al. (2022), supervisors are often overburdened by academic, administrative, and organisational responsibilities, leaving little time for effective engagement during supervision meetings. Supervisors' lack of time, absence from the institution, poor supervisory techniques, and a high supervisor-student ratio may impact student and supervisor productivity. Also, students' low internal motivation, poor time management skills, or weak academic writing skills are other challenges associated with students' non-performance, and an increase in student attrition in PhD programmes.

To add to these situations, the nature of PhD programmes is changing globally. Massification and internalisation are some of the emerging challenges in universities that affect doctoral scholarship (Gruzdev et al., 2020). In recent times, universities are increasingly facing challenges related to diversity, inclusion, and retention of students from diverse backgrounds. Also, universities have started embracing new paradigms, such as online supervision. These have an impact on the supervisory role of faculty members in postgraduate programmes. According to Bogelund (2015), currently, the market-driven approach dominates, possibly affecting the quality of research and supervisor job satisfaction. These changes are engendered by cultural changes in higher education.

Neoliberalism has also upset academic culture. The pervasive influence of neoliberalism is contributing to a toxic environment characterised by individualisation, competition, and the commercialisation of knowledge. This toxic culture has become the new norm, leading to heightened pressures and frustrations among academics, managers, and students alike (Moore et al., 2021; Andrew, 2023). Consequently, the university landscape is fraught with unsustainable work relationships and a proliferation of toxic behaviours. In the face of these challenges, scholars are confronted with the erosion of academic freedom, collegiality, and traditional university culture.

Tepper et al. (2017) identified three drivers of supervisory abuse of subordinates in work settings. The factors that are not mutually exclusive include social learning, identity threat, and self-regulatory impairment. Supervisors may perceive that their attitudes towards their subordinates are socially acceptable and rewarding. They may also have strong individual identities, which make them demonstrate their superiority over others and display high personal sensitivity to threats. Finally, supervisors' self-regulatory impairments that may promote abusive behaviours include work stress, poor sleep quality and exercise, and surface acting.

Hazell et al. (2020) conducted a meta-analysis to examine the mental health of PhD researchers and found that PhD students have a higher prevalence of mental health difficulties compared to the general population, which is a global phenomenon. The study identified several individual, interpersonal, and systemic factors that contribute to mental health problems among PhD students. Among these, isolation and identification as female were the most significant risk factors, along with being single, not having children, and having a lower economic status. The study also found that common psychiatric disorders, such as depression and anxiety, were prevalent among PhD students. Additionally, the quality of the supervisory relationship was found to be essential for maintaining a positive workplace environment.

Masek and Alias (2020) describe fit as the most essential requirement for effective supervision. The fits described are fit in expectation, fit in thinking, and fit in personality and style. The implication is that both actors must have similar mindsets to work together effectively, as a good fit is the key to the excellent interpersonal working relationship between the research student and his advisor.

Muthanna and Alduais (2021) investigated the relationship between research supervision and research integrity, laying the onus of promoting ethical behaviour and integrity in supervision squarely on the shoulders of the supervisor. The supervisor is expected to provide justice, fidelity, autonomy, beneficence, and non-maleficence when relating to supervisees; also, assuming the role of a research supervisor entails taking ethical responsibility for the conduct and output of their students' research.

Twitter content provides a rich source of data that can be analysed for insights into public opinion and sentiments. It is becoming more than a mere tool for marketing or advertising. Ferreira (2021) notes that Twitter could function as a research tool that can support the postgraduate training process. Twitter provides access for both students and supervisors to have access to discipline-specific and interdisciplinary discussions, advice, and collaborations on a global level. The usefulness of Twitter spans various aspects of digital doctoral tradition, including enculturation, communities of practice, and research identity for both students and supervisors. It has also positioned itself as a tool for scholarly (peer) exchange. It also has significant value for research applications (Chen et al., 2021). As a result, it is an excellent source of information for identifying the latent powerplay in the academic system (Liu & Woo, 2021).

The goal of this study is to analyse Twitter content on the subject of toxic supervisor-supervisee relationship to understand its nature, and its effect on student performance satisfaction and progress of the PhD programmes. Investigating toxic supervision in doctoral programmes addresses a critical issue that significantly impacts the success and well-being of PhD students. The study is positioned within the research field of doctoral education and supervision. It contributes to the discourse on effective supervisory practices and holds implications for policy-making for higher education, and training initiatives aimed at improving the overall quality of postgraduate education.

Method and data

Methodology

The study method adopted is content analysis. A content analysis is a quantitative approach to qualitative data obtained from communication mediums. It is a method of systematic evaluation of documents or oral communication that enables the researcher to make "replicable and valid inferences by interpreting and coding textual materials." Through content analysis, unstructured data can be simplified, and trends, patterns, and intentions of the contents of communication in audio, video, pictorial and textual formats can be analysed and interpreted for better understanding.

Data collection and extraction

Tweets related to toxic PhD supervision relationships from January 1, 2020, to March 12, 2023, were extracted, representing the most recent tweets, three years prior to the research and post-COVID-19. Three keywords, "PhD supervisor", "toxic PhD supervisor", and "abusive PhD supervisor" were used to mine the content of Twitter using Twitter's API (Application Programming Interface). The advanced search function of Twitter was also used to widen the search to include 2020 data. The tweet objects (such as tweet text, publishing date, media, and URLs) were extracted using the tweet IDs of the Twitter-API. The total dataset consisted of 368 related tweets and replies. After extracting tweets with the search terms, the data was scanned to identify and remove tweets that were not contextually relevant to the topic of interest. This resulted in a total of 172 tweets selected for qualitative analysis.

The inclusion and exclusion criteria included: (i) relevant tweets may include a visual (image or video) and (ii) relevant tweets must be in English (both image and tweet text). Two research assistants coded and compared the results. Thereafter, some revisions were made to the coding to refine it based on their findings.

Coding and data analysis

Coding was done manually. The Speech Act Theory, developed by philosophers like J. L. Austin and expanded by John Searle categorises linguistic expressions into speech acts based on the speaker's intentions and their impact on the listener. Searle identifies five main categories: declarations, assertives, expressives, directives, and commissives (Searle, 1979). These speech acts play a vital role in shaping communication beyond literal meanings (Barrero, 2023). Understanding these categories helps analysts interpret the intentions behind utterances, including those observed in tweets on platforms like Twitter. This model was used to provide clarity on the nature of the posts. A WordIt word cloud was used to provide a summarised visual representation of the text data. The tool was used to highlight the most prominent words within the datasets with the aim of aiding the understanding of the underlying themes and trends present in the data.

Ethics

Since the data being collected is publicly available, the researcher did not seek informed consent from individuals. However, I ensured that I did not collect any sensitive information, such as personal information or direct mentions that could harm individuals' or institutions' reputations or violate their privacy.

Research questions

The research questions that guided the study are:

i. How is toxicity expressed in the tweets?

ii. What are the prevalent experiences of toxic supervision identified in the tweets?

iii. What are the consequences of toxic supervision?

iv. What are the prevalent keywords?

v. What major themes emanate from the content?

Results

Table 1: Nature of the tweets.

Nature of Tweet	Speech Act	Frequency	Percentage
Complaints	Expressives	58	33.70%
Suggestions/Advice	Directives	43	25%
Opinion	Assertives	37	21.5%
Questions	Directives	12	7%
Humour	Expressives	10	5.8%
Encouragement	Expressives	9	5.2%
Others		3	1.8%
Total		**172**	**100%**

Table 1 explains how toxicity is expressed in the tweets. A frequency count of the tweets revealed that most of the tweets were complaints about the experiences of the PhD students or mentions of the negative experiences of other PhD students (33.7%). Similarly, suggestions or pieces of advice were given by a high percentage of tweet posters (25%). About 22% of the respondents made comments that could be considered opinions on issues concerning toxic PhD supervision. Based on Searle's Speech Act Classification (1979), the tweets were distributed into three speech acts: expressives (45%), directives (32%), and assertives (22%). There is an obvious non-representation of commissive and declaration speech types. The dominance of expressives suggests that Twitter serves as a medium for individuals to vent their grievances and seek emotional support from their peers. The presence of directive and assertive speech acts, such as suggestions/advice and opinions, highlights that individuals are also using Twitter to offer guidance, share opinions, and provide insights into dealing with toxic PhD supervision. This indicates a level of engagement and activism within the community to address and mitigate issues related to toxic supervision. The absence of commissive and

declarative speech acts may suggest a hesitancy or lack of concrete action towards addressing systemic issues within academia.

Table 2: Experiences of PhD students.

Experiences	Freq. (%)
Underrating	15 (20.8%)
Exploitative work	11 (15.2%)
Waste of students' time	10 (13.8%)
Lack of support or protection from institutions	7 (9.7%)
Name-calling	6 (8.3%)
Discrediting	4 (5.5%)
Ignoring emails	3 (4.2%)
Sexism/Misogyny	3 (4.2%)
Too busy to attend to the candidate	2 (2.8%)
Egoism	2 (2.8%)
Bullying	2 (2.8%)
Combination of toxic experiences	7 (9.7%)
Total	**72 (100%)**

Table 2 explains the prevalent experiences of toxic supervision identified in the tweets. Over 55% of the 172 tweets analysed had no expression of toxic supervision experience. However, of the 72 (54.2%) that mentioned at least a consequence of toxicity from their supervisor (advisor), 20.8% tweeted about being underrated or looked down on, 15.2% tweeted about being exploited as "slave labourers", and 10%, about having their time wasted. Institutions were also nonchalant about the students, even when they complained (9.7%). Some students mentioned going through multiple forms of abuse from their supervisors (9.7%). Other forms of toxicity were experienced at a lesser level. If the identified experiences are re-classified into broader themes, there could be two broader categories expressed as follows: (i) Work environment challenges including exploitative work (15.2%), waste of students' time (13.8%), lack of support or protection from the institution (9.7%), ignoring emails (4.2%), and being too busy to attend to the candidate (2.8%); and (ii) Interpersonal issues including underrating (20.8%), name-calling (8.3%), discrediting (5.5%), bullying (2.8%), sexism/misogyny (4.2%), and egoism (2.8%). Both categories of experiences seem to be equally worrisome.

Table 3: Consequences of toxic supervision.

Response	Freq. (%)
Quitting	17 (19.7%)
Fear/Lack of Confidence	14 (16.2%)
Changing/Moving	13 (15.1%)
Mental health problems /Depression	12 (14.0%)
Helplessness	9 (10.5%)
Dropping out of academia	7 (8.1%)
Delayed completion	6 (7%)
Distancing oneself from achievement	6 (7%)
Stress/Burnout	2 (2.3%
Total	**86 (100%)**

Table 3 indicates the consequences of toxic supervision. Only 86 out of the 172 tweets (50%) analysed indicated a response or more to toxic supervision. The most frequent consequences expressed through the tweets were quitting the programme (19.7%), fear and lack of confidence (16.2%) and changing institutions or labs (15.1%). Mental health issues (14%) and helplessness (10%) were also experienced or considered by some of the students. The strongest consequence experienced was the impact on the academic and career paths of the students, which manifested as dropping out of academia (8.1%), delayed completion (7.0%), quitting (19.7%) and changing/moving (15.1%). Almost as significant were the psychological and emotional impact of the toxic environment, which is represented by fear/lack of confidence (16.2%), mental health problems/depression (14.0%), helplessness (10.5%) and stress/burnout (2.3%). The least impactful consequence of toxic doctoral supervision was distancing oneself from achievement (7.0%), which can be considered a behavioural response.

A WordIt word cloud was used to filter the dataset. The image below was obtained after some data cleaning.

Figure 1: WordIt word cloud from the Twitter dataset: toxic PhD supervision. (https://worditout.com/user/2493391/settings/4fc0d147ca435130527836018ed9399f)

During the process of creating the WordIt Image, 50 words were programmed. In addition to the keywords, "supervisor, toxic and PhD" The image shows important words that indicate the nature of the toxicity with time-related concepts such as "time" and "years". Also, the negative experiences "leave", "never", "bad", "left" and "quit". Other important words include "academia", "project", "lab", "experience", "university", "paper", "research", "environment", and "culture" reflective of academic culture and the nature of the work of PhD students and their supervisors. The words "relationship" and "experience" stand out too. The map shows the lifeworld of typical doctoral students in negative supervisory relationships.

Table 4: Thematic representation of the tweets.

Theme	Count	Percentage
Interpersonal Dynamics	60	35
PhD Student Experience	52	30
Mental Health and Well-being	24	14
Academic Environment and Culture	18	11
Support System	18	11
Total	**172**	**100**

Table 4 shows the themes that emanate from the content, while Figure 2 shows the themes presented as a chart in percentages.
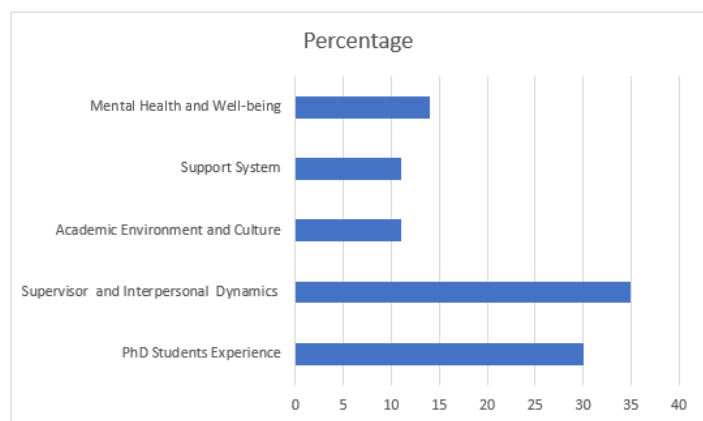

Figure 2: Themes expressed in the Tweets.

The graph above illustrates the themes expressed in the Tweets. The discourse on toxic PhD supervision revolves around five major themes: PhD student experiences, supervisor selection and interpersonal dynamics, academic environment and culture, mentorship and support systems for PhD students, and mental health and well-being. These themes were derived through a coding and recoding process. Most of the tweets were themed around supervisor and interpersonal dynamics (35%) and PhD students lived (negative) experiences (30%). These five themes form a comprehensive corpus of aspects that should be considered during research, planning and/or interventions.

Discussion

From the findings, PhD students consulted with "Academic Twitter" on the topic mostly for "venting" or pouring out their emotions (expressive act), and to provide answers to those seeking support (directive). Tweets like … *During my MPhil (supposed to be a PhD, My supervisor called us idiot and stupid almost every week. He also likes to use toxic words to blame us such a XXX, low IQ, etc. This made us to have a severely low self-esteem, zero confidence and being afraid to give an argument* are good examples of this expressive category. The predominance of expressive speech acts reflects the emotional toll and frustration experienced by individuals facing toxic PhD supervision. Accordingly, a commensurate number of tweets reflected suggestions or advice for example, *Future doctoral students your supervisor more important than university prestige or Don't fall for the "prestige" trap,* opinions and encouragement. The absence of commissive and declarative acts may suggest a hesitancy or lack of concrete action towards addressing systemic issues within academia. This suggests little confidence and the need for further dialogue, advocacy, and collective action to address and reform practices related to doctoral supervision. Malik et al. (2019) and Liu and Woo (2021) confirm that Academic Twitter serves the important role of community management. Suggestions included advising, reporting, and quitting. There were tweets that specifically called out institutions where they perceived these toxic

cultures prevailed. The tweets reflect the multifarious roles of Twitter, especially for emotional support.

Further, the study shows that toxic PhD manifested as the narcissistic behaviours of some supervisors, including intentionally wasting students' time, underrating students, and exploiting them by asking them to undertake tasks outside their academic requirements. The tweets reflect experiences *like my supervisor scoffed and said that sleep deprivation was part of PhD and … I was humiliated by a senior professor… in front of all my peers ….* O'Hara and Cook (2018) report on these types of microaggressions meted out to students, including that they engage in activities beyond their academic expectations by their supervisors, are assumptions and insensitivity about social class background, invalidation of cultural experiences and identities, pressure to assimilate the dominant cultural norms, insensitive remarks about financial circumstances and institutional barriers and policies. The high workload forced on some PhD students and demands reflected in the tweets, *I don't take all of my annual leave, and therefore, neither should you and also, … He even asked me to do his conference presentation slides etc. I'm being tortured mentally.* Some students were mandated to spend between 65 - 80 hours per week in their labs. The high attrition rate and long completion period could also be blamed on the waste of time doing "nothing", while the supervisor ignored students. Gorup and Laufer (2020) reflect many of these narcissistic and oppressive tendencies of supervisors.

Other themes emerged as well. The study showed that institutions and other colleagues are complicit in creating or sustaining some of these unprofessional and unethical cultures in a number of ways: they look on, even when they are aware of the experiences students are undergoing; they do not provide effective support systems; and in fact, protect the culpable staff members: *…He's known for problems with students, but brings in $ so nothing is done….;…even if I report misconduct, they're neglected or punished; …Unfortunately calling them out doesn't work out in the student's favour….*

Sexism, misogyny, and racial biases are part of the unpalatable experiences of some postgraduate students under supervision. The effect of biases and other prejudices on the well-being and academic progress of students is profound. These types of biases are very dangerous to the academy:

One thing that I learned from my experience as the only female student of an advisor is that often, no matter what you do and how well you do it, you will not be as worthy of your advisors' time. It is called misogyny. We should not have to dance around trying to work around it….

Three dimensions highlighted by Brookfield et al. (2002) as ethical, productive, and responsible exercise of power by an educator include first, authentic facilitation of student learning, even if it means redirecting or challenging their approaches. Secondly, transparent communication of the rationale behind exercising power, with constant disclosure of the reasons behind decisions and actions, and finally, ongoing opportunities for students to critique the exercise of power, allowing for feedback and reflection to address

any perceived issues of arbitrariness or unfairness directly.

In their study, Gorup and Laufer (2020) and Kis et al. (2022) discuss the effect of poor supervisory practice on the prospects of doctoral students. The findings of the study show that many of the students with toxic supervisors tended to quit academics entirely, change labs or institutions, and develop low levels of confidence and mental health problems as expressed in the tweets: *Sometimes quitting is the only way forward; … which unfortunately became toxic causing me to change supervisor at a critical time (ended up not finishing my PhD…; … I get a lot of imposter syndrome and insecurity following a really bad experience; I developed anxiety and depression because of how I was treated during my PhD and have spent thousands of dollars on therapy.*

In conclusion, the themes that emerged from the study include interpersonal dynamics, PhD students' experiences, mental health and well-being, academic environment and culture and support systems. In the model developed by van Rooij et al. (2021), a key predictor of PhD candidates quitting the programme was the quality of their relationship with their supervisor. Specifically, a lower-quality relationship was associated with a higher likelihood of contemplating leaving. The study also identified other influential factors, including project-related aspects such as autonomy, workload, and alignment with the supervisor's research, which emerged as significant new predictors in the final model.

Similarly, the findings of the study about the role of interpersonal dynamics as a significant aspect of the supervisor-supervisee relationship align with Dericks et al.'s (2019) report. Supervisory supportiveness, rather than academic qualities such as research record or reputation, emerged as the primary predictor of PhD student satisfaction. Departmental academic qualities and supportiveness were also significant determinants, giving credence to the value of academic culture and environment. In contrast, peer group factors appeared less influential. These determinants exhibited consistency across different disciplines and countries, according to this international study.

Supervisory practices can be improved through training. Haven et al. (2022) showed that a 3-day training involving responsible research practices (RRPs) and interpersonal skills, resulted in improved supervision skills, as reported by both the PhD students and the supervisors. Also, based on Chugh et al.'s (2022) model, problems associated with supervisory feedback which involve the content, processes and expectations of the feedback must be tackled holistically and synergistically with respect to the three actors: institutions, supervisors and students.

Conclusion

Toxic supervision practices have been identified as a significant reason for students discontinuing their doctoral programmes. However, doctoral students' experiences under toxic academic supervision remain insufficiently interrogated. This study sheds light on this issue, based on the analysis of Twitter data, which exposes a lot of discrete but negative information concerning the toxic supervision of PhD students.

The findings of this study show that PhD students generally experience a high level of stress, which emanates from interpersonal interactions with their supervisors and some systemic factors. These are also expressed as narcissistic, exploitative behaviours and attitudes from the supervisor. These stressors lead to responses such as premature quitting of programmes, mental health challenges, and delays in the completion of their programme. The study confirms the true nature of the power dynamics in the academy. It also confirms that Twitter is a robust platform for emotional support for PhD students, given its potential to provide a community for individuals to be inspired, encouraged, and advised on many aspects of their lived experiences.

Limitations of the study and suggestions for future research

A major limitation of this study is that the data comes solely from Twitter, which may not be representative of the overall population of PhD students. This approach may not offer a comprehensive representation of the entire population of PhD students, as it only captures the experiences of those who choose to share their experiences on Twitter. Also, since cultural differences play a role in interpersonal relationships, it would be more responsive to explore the topic of PhD supervision on a spatial basis.

Future research endeavours could adopt a mixed-methods approach that integrates Twitter (social media) data with interviews or surveys of PhD students to expand upon the current findings and address these limitations. A combination of quantitative and qualitative methods to assess the prevalence of various supervision-related issues would provide a balanced result on the subject.

Furthermore, comparing the perceptions of students, advisors, and administrators could offer a more holistic perspective on the strategies required to address toxic supervision. To gain a deeper understanding of the developments and changes in supervision experiences, longitudinal data and location-based data collection could be employed to investigate how policies and interventions could influence reported supervision encounters over time and in various regions.

Recommendations

1. Social media spaces as safe spaces: Students and their supervisors should explore Academic Twitter to garner knowledge on various aspects of their academic and lived experiences. Academic Twitter users, including students, supervisors, and institutions, should actively promote positive and constructive online engagement. This can be achieved by engaging with helpful resources such as handles like @PHDcomics, @ PhDVoice and @ThePhDPlace; and hashtags like #phdchat and #AcademicTwitter which provide empathetic responses to venting tweets and

offering supportive advice to those in need.

2. Reporting systems: Institutions should establish formal channels for PhD students to express their grievances and concerns about toxic supervision. This could include anonymous reporting systems, regular feedback sessions with supervisors, or dedicated support groups where students can openly discuss their experiences, express their feelings without fear. Institutions could also actively monitor discussions on social media platforms like Twitter to identify emerging issues related to toxic supervision and respond to them proactively.

3. Comprehensive training and support programmes: Institutions should develop and implement comprehensive training and support programmes for both supervisors and PhD students to address identified issues and foster a healthier academic environment. Supervisory training should cover interpersonal skills, cultural awareness and sensitivity, healthy work-life balance and ethical supervision practices.

4. PhD support services: Support services for PhD students to cope with the challenges of toxic supervision, such as counselling and mentorship programmes should be encouraged. Peer support groups should be encouraged and resources to help students navigate institutional policies and procedures should be instituted. For instance, peer support networks could be promoted to provide opportunities for students to share their experiences, exchange advice, and collectively advocate for change.

5. Institutional accountability: Mechanisms for holding institutions accountable should be established for addressing toxic supervision. The tasks should include implementing clear policies and procedures for handling complaints, providing avenues for anonymous reporting, and ensuring transparency in addressing reported incidents.

6. Synergetic Approach: In the planning and management of supervision, aspects of supervisory practices that must be considered to improve the supervisor-supervisee relationship include relationship dynamics, mental health, the support system and academic culture. The interventions should encompass a synergistic approach involving the institution, supervisors and students.

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