

Enhancing Psychological Well-Being: Self-Regulated Learning, Motivation, and Emotions Among Doctoral Students in South Africa

Meningkatkan Kesejahteraan Psikologis: Pembelajaran yang Diatur Sendiri, Motivasi, dan Emosi di Kalangan Mahasiswa Doktoral di Afrika Selatan

Muhammad Hoque^{*1, 2}, Nisha Singh^{2, 3}, Junaid Shaik^{2, 4}, René Pellissier⁵

¹ Department of Public Health, Sefako Makgatho Health Sciences University, Ga-Rankuwa, South Africa

² Management College of Southern Africa, Durban, South Africa

³ School of Life Sciences, University of KwaZulu-Natal, Durban, South Africa

⁴ Durban University of Technology, Durban, South Africa

⁵ Higher Education Leadership Development, Cape Higher Education Consortium, Cape Town, South Africa

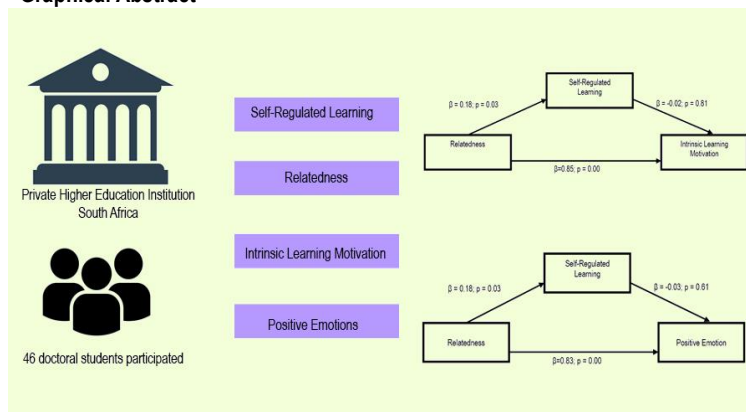
Abstract

The likelihood of dropping out and interrupting studies increases with poor psychological well-being (PWB). The promotion of doctoral students' PWB is therefore very important. The aim of this study was to examine how self-regulated learning moderates relatedness, intrinsic motivation to learn, and positive emotions in doctoral students at a South African Private Higher Education Institution (PHEI). In this cross-sectional study, 46 doctoral students completed a self-administered anonymous questionnaire using an online platform (QuestionPro). Based on the correlation analysis, relatedness was found to be significantly correlated with intrinsic motivation for learning and self-regulated learning. Self-regulated learning and intrinsic learning motivation were significantly correlated with positive emotion. Regression analysis showed that relatedness was a significant predictor of self-regulated learning. However, self-regulated learning was not a significant predictor of intrinsic learning motivation. Psychological support could be provided to doctoral students by PHEIs through the provision of mental health experts to improve self-regulated learning, relatedness, intrinsic motivation, and positive emotions.

Abstrak

Kemungkinan putus kuliah dan mengganggu studi meningkat dengan kesejahteraan psikologis yang buruk (PWB). Oleh karena itu, peningkatan PWB mahasiswa doktoral sangatlah penting. Tujuan dari penelitian ini adalah untuk menguji bagaimana pembelajaran yang diatur sendiri memoderasi keterkaitan, motivasi intrinsik untuk belajar, dan emosi positif pada mahasiswa doktoral di Institusi Pendidikan Tinggi Swasta Afrika Selatan (PHEI). Dalam penelitian cross-sectional ini, 46 mahasiswa doktoral menyelesaikan kuesioner anonim yang dikelola sendiri menggunakan platform online (QuestionPro). Berdasarkan analisis korelasi, keterkaitan ditemukan berkorelasi secara signifikan dengan motivasi intrinsik untuk belajar dan pembelajaran mandiri. Pembelajaran yang diatur sendiri dan motivasi belajar intrinsik berkorelasi secara signifikan dengan emosi positif. Analisis regresi menunjukkan bahwa keterkaitan merupakan prediktor yang signifikan untuk pembelajaran yang diatur sendiri. Namun, pembelajaran yang diatur sendiri bukan merupakan prediktor yang signifikan untuk motivasi belajar intrinsik. Dukungan psikologis dapat diberikan kepada mahasiswa doktoral oleh PHEI melalui penyediaan ahli kesehatan mental untuk meningkatkan pembelajaran yang diatur sendiri, keterkaitan, motivasi intrinsik, dan emosi positif.

Graphical Abstract



Keyword

emotions; mental health; motivation; psychological well-being; students

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Correspondence

Address : Department of Public Health,
 Sefako Makgatho Health
 Sciences University, Ga-
 Rankuwa, South Africa

Email : muhammad.hoque@smu.ac.za



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INTRODUCTION

Doctoral studies are regarded as challenging. This notion is supported by the attrition rates: 33-70% of those who begin their doctoral studies and never complete them (van Rooij et al., 2021). Indeed, Castelló et al. (2017) reported that one-third of doctoral students who did not drop out had considered doing so at some point during their studies. Furthermore, of those who completed their studies, the majority do so in substantially more time than originally anticipated. The high dropout rates pose both competitive and financial challenges to public (HE) and private (PHE) universities/colleges, since a substantial portion of their research output and income depends on doctoral students (Horta et al., 2018).

A mental health crisis has long been acknowledged in graduate education (Eleftheriades et al., 2020). Mental health studies have reported on the following areas: symptoms such as anxiety, depression, and stress; accomplishments; intrinsic rewards; self-efficacy; comprehension and understanding; supervisor support; broader support networks; and self-care and lifestyle (van Rooij et al., 2021; Jackman & Sisson, 2022). Over 40% of graduate students who participated in studies that focused on mental health reported that they had experienced a mental health condition, which, when compared to the general six times higher (Evans et al., 2018).

There has been considerable attention given in recent years to the topic of psychological well-being (PWB) in doctoral students (Jackman & Sisson, 2022). Evidence suggests that PWB is a serious concern among doctoral students (Evans et al., 2018; Levecque et al., 2017). In a large-scale study conducted in Belgium, 51% of graduate students reported experiencing psychological distress (Daniels et al., 2021; Levecque et al., 2017). A study in the United States involving 2,279 graduate students, 90% of whom were doctoral students, found that graduate students are six times more likely than the general population to experience anxiety and depression. Poor PWB has been shown to be associated with dropouts and interruptions in studies (Li & Wang, 2024). Therefore, a better understanding of how to improve doctoral students' PWB would be beneficial for higher education institutions.

The self-determination theory (SDT) states that competence, autonomy, and relatedness constitute the fundamental conditions of psychological development, integration, and social integration (Autin et al., 2021). Several empirical studies have validated these theoretical assumptions across multiple domains and samples (Riggenbach et al., 2019; Van den Broeck et al., 2016; Skinner et al., 2022). Some studies have reported that

fulfilling basic psychological needs can reduce stress appraisals and promote adaptive coping during times of stress. Behaviour should be perceived as effective in order to achieve/experience competence. In the context of higher education, behaviour should be perceived as effective in order to achieve/experience competence, which may be attained by meeting the study requirements of a course. In embracing their autonomy, students may develop a sense of volition and self-acceptance of their behaviour (Pramanik & Khuntia, 2023; Cantarero et al., 2021). Hence, by voluntarily investing effort and time into their studies, students feel autonomous. Relatedness, on the other hand, refers to feelings of connectedness with significant others and their mutual support (Ahn et al., 2021; Alali et al., 2020). There has been an increase in the adoption and promotion of basic psychological needs satisfaction in the educational context in order to encourage personal growth, intrinsic motivation, and psychological well-being, using SDT as a framework for interventions (Ntoumanis et al., 2021; Vansteenkiste et al., 2020).

This study examines the extent to which basic psychological needs satisfaction affects doctoral students' psychological well-being during the COVID-19 pandemic and takes into account the educational context as an opportunity for personal growth and success. Studies suggest that a sense of competence and autonomy is a factor in self-regulated learning in distance learning settings (Edisherashvili et al., 2022; Pelikan et al., 2021; Vanslambrouck et al., 2019). Hence, self-regulated learning is assumed to moderate the relationships between experienced competence and positive emotion. The relationship between relatedness and positive emotion is hypothesised to be moderated by self-regulated learning.

METHODS

The study was conducted at a PHEI following a facilitated self-regulated learning framework for doctoral support and was carried out amid the global pandemic lockdown. A cross-sectional approach was followed, inviting all 62 registered doctoral students to participate. Thus, sampling was not required. Data were collected using an online platform named QuestionPro. Before beginning the self-administered questionnaire, participants were informed about the study's goals, the approximate duration of the questionnaire, and the complete anonymity of their data. Participation in the study was voluntary, and those who consented, completed the survey questionnaire. Ethics approval to conduct the study was obtained from the institution's ethics committee.

Table 1
Demographic Information

Characteristic	n	Percentage
Gender		
Male	29	63.00%
Female	17	37.00%
Contact with Supervisor		
Bi-Weekly	10	21.70%
Weekly	12	26.10%
Monthly	12	26.10%
Ad hoc	12	26.10%
Contact with Cohort Members		
Bi-Weekly	1	2.20%
Weekly	5	10.90%
Monthly	11	23.90%
Quarterly	8	17.40%
Ad hoc	16	34.80%
Never	5	10.90%
Work Arrangements		
Daily	30	65.20%
Sometimes	14	30.40%
Never	1	2.20%
Missing	1	2.20%
Year of DBA Registration		
2018	3	6.50%
2019	9	19.60%
2020	15	32.60%
2021	19	41.30%

Existing scales were used to appropriately address the current circumstances. To ensure the content validity of the measures, the items were revised based on expert judgments from members of the research group. All items in the questionnaire were rated on a 5-point Likert-type scale, ranging from 1 (strongly disagree) to 5 (strongly agree). Therefore, higher values reflect a greater level of agreement with the statements. Data were collected between 27 January 2022 and 18 February 2022. Reminder emails to participate in the study were sent to all participants on a weekly basis.

Relatedness was measured by assessing three items taken from the Work-Related Basic Need Satisfaction Scale (Van den Broeck et al., 2010). The

items targeting relatedness did not refer solely to the PHEI context but also in general terms, such as "Currently, I feel connected with the people who are important to me." Self-regulated learning in terms of goal setting and planning one's learning process was assessed using three items, adapted from the short version of the Learning Strategies of University Students questionnaire. For example, "In the current home-learning situation, I plan my course of action."

Positive emotion was measured with two items inspired by the Scale of Positive and Negative Experience (Diener et al., 2010) and one item adapted from the optimism subscale of the EPOCH Measure of Adolescent Well-Being (Kern et al., 2016). Intrinsic learning motivation was

Table 2
Reliability Analysis of The Constructs

Construct	Cronbach's Alpha
Basic Psychological Needs: Relatedness	0.909
Positive Emotion	0.802
Intrinsic learning motivation	0.934
Self-regulated learning	0.816

Table 3
Pearson correlation test outcome among the constructs

Constructs		Relatedness	Positive Emotion	Intrinsic Learning Motivation	Self-regulated Learning
Relatedness	<i>r</i>	1	0,220	.297*	.297*
	p-value		0,142	0,045	0,045
Positive Emotion	<i>r</i>	0,220	1	.639**	.746**
	p-value	0,142		0,000	0,000
Intrinsic Learning Motivation	<i>r</i>	.297*	.639**	1	.656**
	p-value	0,045	0,000		0,000
Self-regulated Learning	<i>r</i>	.297*	.746**	.656**	1
	p-value	0,045	0,000	0,000	

assessed with three items adapted from the Scales for the Measurement of Motivational Regulation for Learning in University Students.

Data were analyzed using SPSS Version 27.0. Confirmatory Factor Analysis using robust maximum likelihood estimation was conducted to analyze the construct validity of the scales. Goodness-of-fit was evaluated using the χ^2 test for model fit, the comparative fit index (CFI), and the root mean square error of approximation (RMSEA). P-values < 0.05 were considered statistically significant.

RESULTS

This section presents the empirical results of the study. A total of 46 doctoral students completed the self-administered questionnaire which resulted in a 74% response rate. About two-thirds of the doctoral students were male (63%). It was found that a quarter of the doctoral students (26%) do contact their supervisors weekly, monthly and on an ad hoc basis whilst 16 (34.8%) do contact with cohort members on an ad hoc basis. When asked about their work arrangement, 65% reported that they worked daily (See Table 1).

The Cronbach’s alpha reliability coefficient was used to determine the reliability of the constructs. As shown in Table 2, the Cronbach’s alpha coefficient values range from 0.802 to 0.909, suggesting that the study constructs were reliable.

Based on the overall scores of the constructs, it was found that relatedness was positively correlated with intrinsic learning motivation and self-regulated learning. Positive emotion was correlated with intrinsic learning motivation and self-regulated learning. It was also found that intrinsic learning motivation was strongly positively correlated with self-regulated learning (See Table 3).

Regression analysis was used in this study to investigate the impact of relatedness on intrinsic learning motivation and positive emotion mediated by self-regulated learning. Figure 1 illustrates that relatedness was a significant predictor of self-regulated learning (p-value = 0.03) and that self-regulated learning was not a significant predictor of intrinsic learning motivation (p-value = 0.81). These findings suggest that self-regulated learning does not mediate the impact of relatedness on intrinsic learning motivation. It is evident in Figure 2 that self-regulated learning was not a significant predictor of positive emotion (p-value = 0.61).

Figure 1
The Mediating Effect of Self-Regulated Learning on Relatedness and Intrinsic Learning Motivation

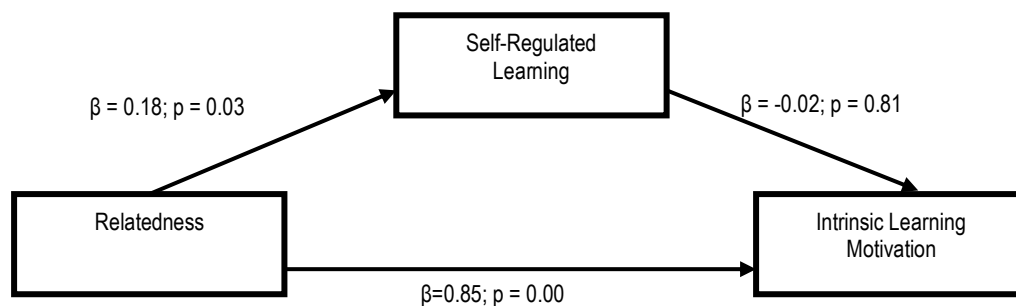
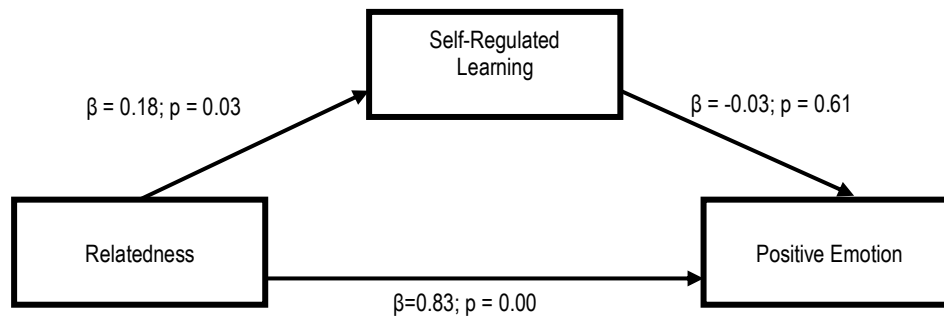


Figure 2

The Mediating Effect of Self-Regulated Learning on Relatedness and Positive Emotion



DISCUSSION

This study aimed to investigate the role of self-regulated learning as a moderator. The study found relatedness was a significant predictor of self-regulated learning. However, self-regulated learning was not a significant predictor of intrinsic learning motivation and positive emotion.

There was no major difference in contact sessions with the supervisor with meetings spread fairly evenly across the provided intervals. Interestingly the majority of the students preferred contact with their colleagues on an ad hoc basis followed by monthly contacts. A possible explanation is that despite the harsh lockdown regulations, students were able to contact their supervisors using online and other communication mechanisms. In a Swedish study conducted on 69 doctoral students (Börgeson et al., 2021), it was found that the reduction in the frequency of meetings and lack of communication from supervisors were key to a deterioration in the student-doctoral supervisor relationship. This was not the case in the present study. Notably, trend analysis showed a decline in social integration with fellow doctoral students during the lockdown, thereby indicating a degeneration in social support networking during this period (Pyhältö et al., 2022). Importantly, the continued administrative and pastoral care support provided to supervisors and students during the lockdown may have facilitated or encouraged regular supervisor-student interaction.

Relatedness refers to a desire to be socially connected to others and receiving mutual support from them (Keller, 2016; Holzer et al., 2021). We found that relatedness was significantly correlated with intrinsic learning motivation and self-regulated learning. We also found that relatedness was a significant predictor of self-regulated learning, but self-regulated learning was not a significant predictor of positive emotion. These results are in contrast with the mediational hypothesis, since it was shown in this study that positive emotions encourage planning, monitoring and critical thinking which are

essential components of self-regulated learning (Maddens et al. 2023).

The absence of positive emotions can demotivate individuals to can demotivate individuals to engage meaningfully with their environments (Printer, 2023). A doctoral student who has a sense of belonging and receives academic and social support, is more likely to experience positive emotions resulting in better well-being and long-term flourishing (Yıldırım et al., 2024). Several authors are of the view that social interactions should be encouraged and supported by higher education institutions irrespective of the mode of programme delivery (Tomás-Miquel et al., 2016; Heublein et al., 2017; Holzer et al., 2021). Activities that promote student collaboration e.g., research workshops and seminars should be held on a regular basis to enhance intrinsic motivation learning, whereby doctoral students may develop cognitively and experience positive emotions when completing the goals towards their research project (Oudeyer & Kaplan, 2007). Researchers have also reported that increased financial burden (due to rising tuition costs) could have impacted on the lack of a strong positive correlation between self-regulated learning and positive emotion (van Tienoven et al., 2022).

Upon contemplation of the incorporation of self-regulated learning with relatedness, intrinsic motivation, and positive feelings, I acknowledge that my individual beliefs, values, and, to a certain degree, religious viewpoints strongly correspond with the fundamental concepts that underlie this research. I firmly believe in the inherent worth of education as a catalyst for profound change, not only in terms of acquiring knowledge but also for individual and collective development. The values I prioritise are centred around the significance of establishing connections, providing mutual support, and striving for a sense of purpose. These values align with the idea of relatedness and intrinsic motivation. In addition, I have a profound admiration for the autonomy and self-control that self-regulated learning represents,

since it demonstrates the conviction that individuals could mould their own trajectories via commitment and self-restraint. These concepts align with my belief that education should encompass all aspects of a person's well-being, including their intellectual and emotional development. This connection strengthens the journal's emphasis on investigating the integration of psychological and educational concepts to enhance the academic experience for students in a more fulfilling and significant way

Due to its cross-sectional nature, this study only collects data at one specific moment, which restricts the capacity to establish a causal relationship between variables. The causal link between self-regulated learning, relatedness, intrinsic motivation, and positive emotion remains inconclusive. The study depends on self-reported data, which can include biases such as social desirability bias or recall bias. Doctoral students may exhibit response biases or have imperfect recollection of their experiences. The findings lack generalisability beyond the specific setting of South African doctoral students. The relevance of the results to PhD candidates in different countries or educational systems may be influenced by cultural and educational variations. The study primarily examines self-regulated learning as a moderator, but there could be more unexplored factors (such as external pressures, academic assistance, and personal situations) that also impact the connections between relatedness, intrinsic motivation, and happy feelings. A small or non-diverse sample size, such as one without gender, age, or disciplinary variation, may restrict the statistical power of the study and limit the generalisability of the findings to various subgroups of PhD students. The study's findings may be subject to the influence of the temporal environment, such as stressors associated to the pandemic and economic variables, at the time the data was collected. This may provide challenges in generalising the results to other time periods.

Some of the arguments that support the concept of the importance of psychological support in education, especially in the context of distance education such as in surah Ash-Sharh/94:5-6, which translates as

"For indeed, with hardship (will be) ease. Indeed, with hardship (will be) ease."

This verse reinforces that in every difficulty, including in the face of emotional and psychological challenges often faced by doctoral students, there is ease to be found. Good psychological support, such as that provided through mental health services or social integration mechanisms, can be an important tool for students to not only overcome the obstacles they face but

also to find the path to ease and balance in their learning process. With this support, doctoral students can more easily manage academic and emotional stress, strengthen their resilience, and ultimately achieve their academic goals more effectively and productively. According to [Janssen et al. \(2021\)](#) the right support can help them maintain their motivation to learn, build closer relationships with supervisors and fellow students, and foster positive emotions that support a better and more meaningful learning process.

In addition, the Prophet Muhammad in HR. Bukhari No. 2442, revealed that:

"Whoever fulfilled the needs of his brother, Allah will fulfill his needs"

This Hadith shows the importance of helping others, which can be translated as the importance of PHEI providing access to mental health experts to help doctoral students overcome their psychological challenges. Both sources underscore the importance of social support, the ease behind difficulties, and helping others in the context of education and life.

CONCLUSIONS

The results of this study inform the need for PHEIs, especially those offering distance education, to provide mechanisms for social integration of doctoral students to minimise the risk of psychological distance between the students and their supervisors or peers, and build-up of negative emotions. Facilitation of access to a mental health expert to doctoral students by PHEIs would provide additional psychological support to reinforce self-regulated learning, relatedness, intrinsic motivation learning and positive emotion. Supervisor workshops, and counselling assistance by PHEIs would also be beneficial in ensuring that supervisors are prepared for the challenges posed by the pandemic and continue to regularly support and encourage their doctoral students to complete their studies within the minimum time. Programmes that encourage social relatedness such as student workshops, instead of being scaled down during black swan events such as the COVID-19 pandemic, should intensify even through online mechanisms, if face-to-face in-person gatherings are not possible. Pastoral care monitoring on a regular basis by PHEIs would also reinforce the psychological support provided to doctoral students.

Implement peer mentorship programs in which experienced PhD students provide guidance and assistance to incoming students. This promotes a feeling of inclusion and offers both educational and emotional

assistance, which helps reduce feelings of loneliness. Enhance mental health services to explicitly target the distinct demands encountered by PhD students, such as the stress associated with dissertations and the difficulties in maintaining a work-life balance. Providing regular mental health assessments and organising training on stress management and resilience can be advantageous.

Introduce cohort-based approaches, in which students advance through their doctoral studies in groups. This fosters a sense of communal belonging and collective involvement, so augmenting social cohesion and mitigating sentiments of isolation. Facilitate writing retreats and support groups that prioritise both academic advancement and the opportunity for students to openly discuss their difficulties and exchange tactics for managing the rigorous demands of PhD studies. Promote multidisciplinary collaboration by organising lectures, research initiatives, and social gatherings. Engaging in this activity expands students' social connections, promotes the sharing of knowledge, and enhances their sense of belonging to the academic community.

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AUTHORS' CONTRIBUTIONS

Muhammad Hoque wrote the manuscript, acquired the data, revised the manuscript, and read and approved the final manuscript. Nisha Singh, Junaid Shaik and René Pellissier reviewed the manuscript, and analyzed the data. All authors designed the study, formulated the concept, enrolled participants, collected data, revised the manuscript, and performed the field work.

AUTHORS' INFORMATION

Muhammad Hoque is a full professor and Head of Epidemiology and Biostatistics Unit in the Department of Public Health, Sefako Makgatho Health Sciences University, South Africa. Dr. Nisha Singh is the Senior Manager in the Research Department, Management College of Southern Africa, and Research Fellow in the School of Life Sciences, University of KwaZulu-Natal, South Africa. Dr. Junaid Shaik is a senior lecturer in the Durban University of Technology, South Africa. René Pellissier is a full professor in Higher Education Leadership Development (HELD), Cape Higher Education Consortium, South Africa.

COMPETING INTERESTS

The author(s) declare no potential conflict of interest with respect to the research, authorship, and/or publication of this article.

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