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Associations between resilience, technostress and reflective capacity in social pedagogy students: A structural equation modeling methodology

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Abstract

Understanding factors affecting student academic and life outcomes may be critical for social work programs and educational institutions. Therefore, this study aims to explore the relationships between resilience, technostress and reflective capacity among social work students. A cross-sectional non-experimental research design was used. One hundred and sixty-three social work students completed an online survey measuring technostress level, reflective capacity and psychological resilience. Data were analyzed using Pearson's to estimate linear correlations, confirmatory factor analysis to ensure model fit and structural equation modeling with covariates to reveal the relationships between the measured constructs. The results indicated that resilience had a direct and negative effect on technostress, a positive and direct effect on reflective capacity and a negative indirect effect on technostress through reflective capacity. This means that social work students with higher levels of resilience had lower levels of technostress related to technology use were more likely to engage in reflective practices and had lower levels of technostress due to improved reflective capacity. These findings emphasize the significance of resilience and reflective practices in mitigating the negative effects of technology use among social work students. However, researchers should be cautious about generalizing findings due to the sample's limitations and future investigations should consider longitudinal data from diverse populations.

Keywords: Higher education, Psychological resilience, Resilient behavior, Self-reflection, Social work students, Technology.

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Contents

Contribution of this paper to the literature

This paper addresses the lack of empirical evidence on how psychological resilience is related to technostress levels among social work students and how reflective capacity mediates this relationship. This study is the first to test a structural model that links resilience, reflective capacity and technostress.

1. Introduction

Social pedagogy refers to a field of study mainly related to social work (often seen as synonymous with social work, in the text, social pedagogy and students enrolled in it are mentioned as social work students respectively). It addresses diverse social and psycho-social issues that impact people's everyday lives such as social exclusion, physical disabilities and unemployment through educational and social interventions (Hämäläinen, 2015; Janer & Ucar, 2019). Social work practices that are embedded within communities through institutions such as hospitals and for-profit and nonprofit organizations cover a wide range of duties and require comprehensive training for practitioners (Lwin & Brady, 2023). Social work students experience a variety of obstacles during their training and preparation for the field including navigating complex social and technological environments. The implementation of new public management in human services organisations, where cost-effectiveness, standardized procedures and manuals have taken dominance over client outcomes is the main source of issues at the societal level. Therefore, a logic that puts organizational interests and bureaucratic needs first undermines the strong principles of professionalism that are based on experience-based wisdom and moral values (Blome & Espvall, 2023). In terms of technological challenges, in recent years, the increasing reliance on technology in everyday social work, including the use of algorithmic decision-making systems (James, Lal, Liao, Magee, & Soldatic, 2023) has transformed the way social pedagogy must be practiced now, e.g., the use of simulation activities (Jefferies, Davis, Mason, & Yadav, 2023) so that potential social workers can engage effectively with the realities of sociotechnical practices (Taylor-Beswick, 2023). Consequently, these multifaceted challenges can be stressful, demanding students of social work to exhibit adaptive capabilities, effectively engage with technologies and build on their mastery by contemplating their past experiences in order to contend with the complexities of their training and future professional roles. In this context, resilience, reflective capacity and technostress emerge as significant areas of investigation.

2. Literature Review

Resilience can be defined as the capacity of a dynamic system e.g., an individual or a community to successfully adapt, cope with and recover from challenging or adverse circumstances (Doom et al., 2023; Hunsu, Oje, Tanner-Smith, & Adesope, 2023; Sorbet & Notar, 2022) while maintaining or regaining good mental health (Schafer, Kunzler, Kalisch, Tuscher, & Schafer, 2022). It involves demonstrating adaptive behavior across various domains such as social functioning (Cusack, Wright, & Amstadter, 2023) and flourishing in the face of stress or setbacks (Wharton, Kotera, & Brennan, 2021). Reflective capacity refers to an individual's ability to engage in reflective practice (Gustafsson, Engström, Lindgren, & Gabrielsson, 2021) which can be defined as an active and deliberate cognitive process of taking a critical stance towards one's present and prior experiences aimed at learning from those experiences to develop as professionals (Patel & Metersky, 2021; Saban, Drach-Zahavy, & Dagan, 2021). Technostress is generally conceptualized as a form of stress resulting from individuals' difficulty in adapting to and coping with the ever-changing cognitive, social and psychological demands of information and communication technologies (ICT) leading to maladaptation and challenges in effectively using these technologies due to feeling overwhelmed by the excessive amount of tech-related information (Asad, Erum, Churi, & Guerrero, 2023; Bourlakis, Nisar, & Prabhakar, 2023; Kim, Park, Kim, Kim, & Seo, 2022).

2.1. Why This Study is Important

Social work is a psychologically demanding field so it is essential that students possess high resilience, a tolerance for technological stress and the capacity for self-reflection. These qualities will help them overcome obstacles and persevere through difficult cases. The students are exposed to multiple sources of stress, such as academic workload, field placement, ethical dilemmas and emotional labor (Collins, Coffey, & Morris, 2018). These challenges may have an impact on their performance, well-being and ability to remain in their field (Kim & Lee, 2017). Additionally, social work students are increasingly required to use technology in their education and practice including online learning platforms, digital tools and social media (Zemaitaityte, Bardauskiene, Pivoriene, & Katkonienė, 2023). Technology can offer many benefits such as access to information, communication and collaboration. It can also bring about technological stressors such as inclusion and overload issues (Kim et al., 2022). *Therefore*, social work students need to develop resilience and reflective capacity to cope with technostress and other stressors in their learning environment.

2.2. Research Gap

Despite the importance of the aforementioned variables, no research has been conducted in order to investigate the impact of resilience and reflective ability in relation to technostress, particularly in the context of social pedagogy. The present study aims to evaluate the interplay between resilience, technostress and reflective capacity among social work students by examining the direct and indirect effects of psychological resilience on technostress levels using structural equation modeling (SEM) based on these considerations. Finally, the findings from this study may inform the development of targeted interventions to mitigate technostress and enhance students' resilience within social pedagogy settings.

3. Theoretical Background and Research Hypotheses

The present study is underpinned by resilience theory and the concept of reflective practice. Resilience theory primarily conceptualized by Werner (2012) and Garmezy (1971) postulates that individuals with high levels of

resilience are better able to bounce back from difficult experiences (Werner, 2012). This has been confirmed empirically. According to Yan and Lin (2022), resilience is important in assisting stroke patients who have social, mental and physical impairments as a result of the condition to build appropriate coping methods during treatment. Panigrahi and Suar (2022) analyzed predictors and ramifications of resilience among cyclone Fani survivors and revealed that survivors with higher levels of resilience reported better "posttraumatic growth and thriving in terms of meaning, purpose, life satisfaction, sense of accomplishment and self-worth". It is possible to apply resilience theory to social pedagogy in such a way that learners with higher levels of resilience are anticipated to be better prepared to avoid resource loss when confronted with the cognitive, social and psychological demands of information and communication technologies. Hence, we posit the following hypothesis:

H1. The level of psychological resilience will have a direct negative effect on the level of technostress among social work students.

The concept of reflective practice advanced by Schon (1983) developed the idea of reflective practice which emphasises the importance of critical reflection on one's experiences is crucial for learning and professional development. Personal reflection can enable individuals to understand their own actions and thought processes identify strengths and areas for improvement and enhance their professional competencies (Guthrie, Chunoo, & Teig, 2021). There is corroborative evidence to their self-reported upturns "in technical skills, interpersonal and relational skills, empathy towards clients and students as well as heightened awareness of their own thoughts, feelings, beliefs and attributes with respect to health practitioners, therapists and educators who participated in structured reflective practice (Falon, Hoare, Kangas, & Crane, 2022). A cross-sectional study by Bucknell, Kangas, and Crane (2022) found a positive relationship between adaptive self-reflection and resilience. Furthermore, randomized controlled trials on officer cadets support the reciprocal connection between resilience and reflective functioning. A resilience-strengthening intervention based on self-reflection was shown to have a beneficial impact on mental health outcomes through elevated reflection and reduced brooding (Falon et al., 2021). Similarly, an emotion-regulatory self-reflection intervention was more effective for resilience improvement when compared to coping skills training (Crane et al., 2019a).

It can be inferred from the available data that social work students who show greater psychological resilience are more likely to critically reflect on their experiences particularly the difficulties presented by technology. A range of studies highlight the importance of reflective capacity in various educational contexts but the specific relationship between reflective capacity and technostress is not directly addressed in the existing literature. We can only suppose that through strong reflective capacity, students are better equipped to process and make sense of technostressors, thus reducing the adverse effects of technostress on their well-being. Reflective capacity allegedly acts as an intermediary mechanism that enables students to effectively cope with technostress making it a significant factor in the relationship between psychological resilience and technostress levels. With this in mind, we formulate the following hypothesis:

H2. The level of psychological resilience will be positively related to reflective capacity (a), whereas reflective capacity will be significantly inversely associated with technostress level (b), so that reflective capacity will fully or partially mediate the relationship between psychological resilience and technostress among social work students (c).

4. Methods

This study relied on a cross-sectional and non-experimental research design.

4.1. Samples and Procedures

The inclusion criteria for this survey were students in Kazakhstani higher education institutions who could read Kazakh and were enrolled in a Bachelor's or Master's degree program majoring in social pedagogy and possessing professional experience in the social work field. The affiliated institution of the authors could not provide enough eligible respondents so to maximize the potential sample size, a letter was composed explaining the objective of the study, describing the inclusion criteria, informing potential respondents about the voluntary nature of participation and offering a link to an electronic survey, the first part of which comprised questions about participants' gender, age (in years) and study level (undergraduate or masters) whereas the second part contained scales gauging reflective capacity, technostress and resilience. The letter was sent by e-mail to faculty members in universities across several cities in Kazakhstan who then forwarded it to their students meeting the criteria. A total of 171 students participated during April and May 2023. After eliminating responses with the same option for all items, 163 valid self-reports from 163 participants remained. The mean age of respondents was 26 years ranging between 21 and 37 years. Out of them, 84 (51.53%) were female, 79 (48.47%) were male, 27 (16.56) were graduate students and 136 (83.44%) were undergraduate students.

The survey was in Kazakh. The original English items were forward and backward translated and linguistically adapted by two independent translators. Face validity was assessed qualitatively by asking the opinions of three part-time social work students from a convenient sample about its difficulty and ambiguity.

4.2. Instruments

Reflective capacity was evaluated using the reflective capacity scale derived from the reflective practice questionnaire (Priddis & Rogers, 2017) which comprises 16 items such as "I contemplate the interactions with clients after they occur." Participants were asked to indicate their level of agreement with each statement using a six-point response range (1 = not at all, 6 = extremely) with higher scores implying better capacity for reflection. The Cronbach's α for the entire scale in the Kazakh language was 0.74.

The Technostress Scale developed by Galvin et al. (2022) was used to measure technostress consisting of 17 items, e.g., "ICTs generate more requests and issues than I would otherwise experience." Respondents were required to rate their agreement on a seven-point Likert scale (1 = strongly disagree to 7 = strongly agree). The higher the total score, the greater the level of technostress. The Cronbach's alpha of 0.81 was obtained for the scale.

Resilience was evaluated through the Connor-Davidson resilience scale-10 (Campbell-Sills & Stein, 2007) as adapted in Smith, Emerson, Haight, Mauldin, and Wood (2019). This scale comprises ten items designed to assess psychological resilience. For example, "I can maintain focus under pressure." The original instrument employed a five-point Likert scale ranging from 0 (not true at all) to 4 (true nearly all the time) with higher scores representing higher resilience. However, for consistency with the previous two questionnaires, we transformed the data to a range of 1 to 5. The Cronbach's α for the overall scale was 0.79.

4.3. Data Analysis

Descriptive statistics were computed and bivariate correlations among the variables were estimated using Pearson's r which was conventionally categorized as low if it fell between 0 and .29 moderate if it ranged from .30 to .59 and strong if it exceeded .60. SEM, a method capable of simultaneously testing the structural and measurement models (Legate, Hair, Chretien, & Risher, 2023) was performed using the process macro to evaluate the structural association between technostress level, reflective capacity and psychological resilience level. Respondents' age, gender and study level were controlled variables. The fundamental assumptions necessary for SEM, namely no multicollinearity (correlations below .85), absence of missing values and outliers and adherence to the normal distribution (Sadiq, 2022) were met for the collected data. Assumptions of linearity, homoscedasticity and normality of estimation error were assessed by generating lowess curve, homoscedasticity plot and Q-Q plot, respectively in Graph Pad Prism (Graph Pad Software, Boston, Massachusetts, USA). The collected data fulfilled the assumptions. Confirmatory factor analysis was necessary because modified questionnaires were used and the study's goodness indices demonstrated the appropriate fit of the model.

The use of distinct self-report instruments to collect data from identical respondents may have resulted in common technique bias which could have affected the relationships between the characteristics under investigation (Fajriyati, Afiff, Gayatri, & Hati, 2020). To tackle this concern, the Harman single factor test (Podsakoff, MacKenzie, Lee, & Podsakoff, 2003) was carried out in the R environment and yielded 4.21%, affirming that none of the factors accounted for more than 50% of the variance in the model, so the absence of common method bias could be declared.

The dataset was exposed to SEM after the assumptions were examined and each participant's scores on items within a scale were averaged to obtain an individual score for each questionnaire due to the dissimilar dimensionality of the questionnaires. Significance was declared at $P < .05$. Bias-corrected confidence intervals were determined after 200 bootstraps. If the confidence interval around the indirect effect did not cross zero, the mediation was deemed significant. Then, if the direct between-variable effect was found to be significant, the mediation could be recognized as complete. Otherwise, a partial mediation could be concluded (Lin, Liu, Fan, Tuunainen, & Deng, 2021). The proportion of variance in an outcome variable explained by independent variables was inferred from the R2 criterion.

5. Results

The descriptive statistics and correlation values are listed in Table 1. It is evident from the results that resilience, technostress and reflective capacity were significantly correlated with each other.

Table 1. Descriptive statistics and correlation matrix.

Variable	Mean	SD	Resilience	Reflective capacity
Resilience	3.22	1.07		
Reflective capacity	3.94	1.23	0.52*	
Technostress	2.91	0.86	-0.53*	-0.45*

Note: * p <.001.

SEM coefficients inform us that the link between participants' resilience level and technostress level was significantly inversed (B = -.331, p = .001) confirming H1 (see Table 2). Resilience scores exhibited a significant positive effect on social work students' reflective capacity (B = .602, p <.001) supporting H2a while reflective capacity was negatively related to technostress level in a significant manner (B = -.157, p = .011) which corroborates H2b.

Table 2. Results from structural equation modeling. Study level, age and gender are covariates.

Path	B	β	P	Bootstrapped 95% CI	
				Lower	Upper
Resilience → Reflective capacity	0.602	0.521	<.001	0.443	0.773
Study level → Reflective capacity	-0.262	-0.079	0.191	-0.673	0.177
Age → Reflective capacity	-0.016	-0.054	0.404	-0.051	0.023
Gender → Reflective capacity	0.309	0.125	0.061	-0.006	0.639
Resilience → Technostress	-0.331	0.411	0.001	-0.570	-0.167
Reflective capacity → Technostress	-0.157	-0.225	0.011	-0.269	-0.024
Study level → Technostress	-0.109	-0.047	0.531	-0.535	0.191
Age → Technostress	0.013	0.059	0.297	-0.016	0.036
Gender → Technostress	-0.105	-0.061	0.370	-0.329	0.162
Resilience → Reflective capacity → Technostress	-0.094	-	0.023	-0.169	-0.012

Note: B = Unstandardized beta, B = Standardized beta, CI = Confidence interval.

Moreover, there was no 0 between the lower and upper boundaries of the 95% CI for the interaction of these paths. Since the direct effect was statistically significant, it can be stated that reflective capacity partially mediated the relationship between resilience and technostress in this study which supports H2c. Resilience along with the covariates explained 30% of the variance in reflective capacity and 33% of the variance in technostress. The resultant structural model is presented in Figure 1.

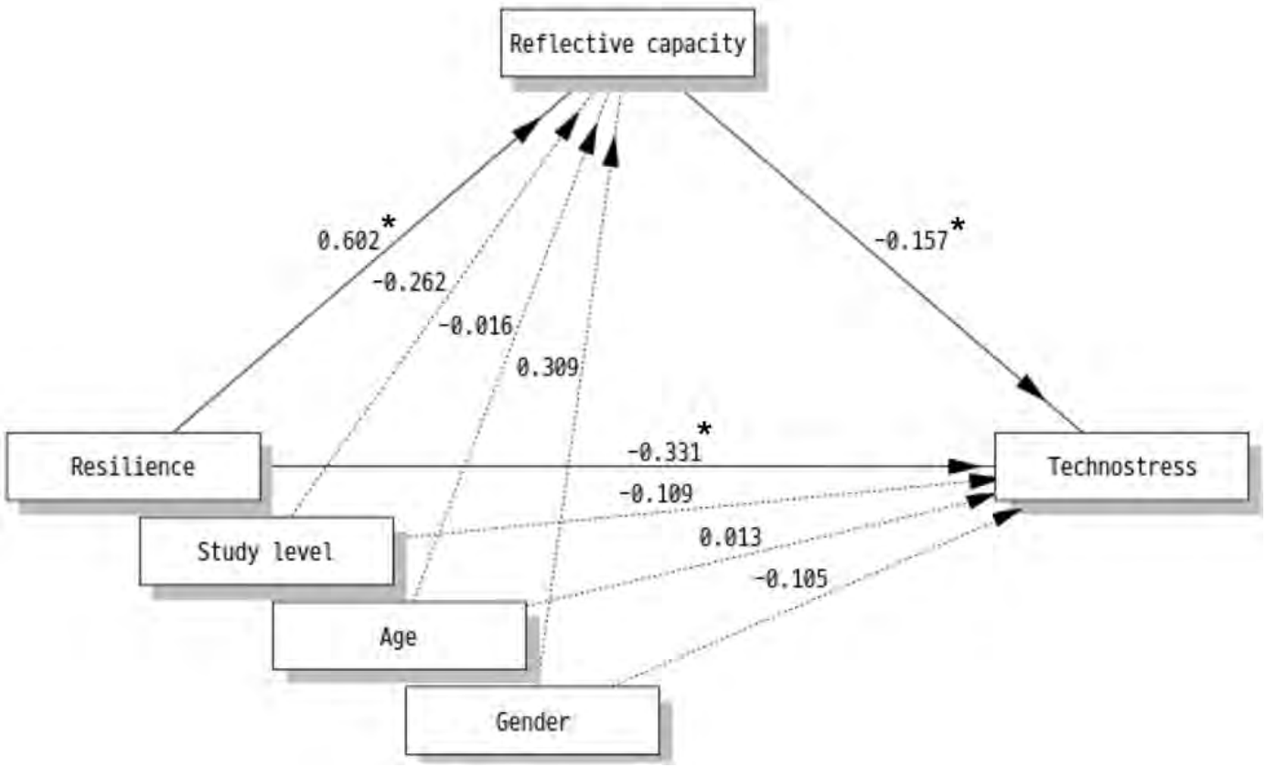

Figure 1. Indirect effect of resilience on technostress via reflective capacity, adjusted for study level, age, and gender. Values represent unstandardized regression coefficients.
Note: * p <.001.

6. Discussion

The main objective of this study was to assess how resilience, technostress and reflective capacity are interconnected among social work students. The results supported all the hypotheses and showed that resilience had a negative direct effect on technostress, a positive direct effect on reflective capacity and a negative indirect effect on technostress through reflective capacity. The results of the current survey suggest that social work students who possess stronger coping abilities and emotional resilience may be less stressed and have fewer negative outcomes from using technology in their academic and professional lives. Moreover, students with higher levels of resilience are more likely to engage in reflective practices which are crucial for personal and professional growth in the social work field. Furthermore, those possessing greater reflective capacity are less likely to face technostress indicating that introspection and self-awareness might play a role in reducing the negative impacts of technology use. Lastly, the findings suggest that reflective capacity acts as a mechanism through which resilience influences technostress levels, i.e., more resilient social work students may engage in more effective reflective practices that help mitigate the adverse effects of technostress.

The observed negative relationship between resilience and technostress could be attributed to the premise that resilient individuals tend to perceive stressful situations as opportunities for growth rather than threats (Kuntz, 2021). They might be more adept at managing stressors and adapting to new circumstances, including those related to technology use. Consequently, they were better equipped to handle the potential stressors arising from technology-related challenges.

The positive relationship between resilience and reflective capacity could be explained by the idea that individuals with higher resilience are more open to self-reflection and learning from their experiences. Engaging in reflective practices allowed them to process and make sense of their emotions, thoughts, and behaviors leading to increased self-awareness and the acquisition of new resources. This hypothesis is consistent with Crane, Searle, Kangas, and Nwiran (2019b) concept that self-reflection can improve resilience by providing insights into one's strengths and personalized alternate approaches to overcome instability.

The negative link between reflective capacity and technostress might be explained by assuming that individuals who were skilled at reflection could be more aware of the impact of technology on their well-being which could empower them to implement strategies to cope with technostress and find a balance between technology use and self-care.

Previous research supports our findings but the discussion of the findings is restricted by the fact that the relationship between resilience and technostress has been investigated mostly in full-time workers in a diverse occupational context (Singh, Bala, Dey, & Filieri, 2022; Sommovigo et al., 2023). For example, a cross-sectional study Martinez (2023) discovered that school teachers with high scores on resilience perceived lower technostress.

7. Implications

The results of this study may have several implications for research and practice in the field of social pedagogy. First, they highlight the importance of resilience as a factor that can influence technostress and reflective capacity. Thus, researchers should further explore the antecedents, consequences and mechanisms of resilience in social work students. Practitioners should also design and implement interventions that enhance resilience among social work students such as mindfulness training previously shown to strengthen psychological resilience (Antonini Philippe, Schwab, & Biasutti, 2021) particularly by improving stress-related neural mechanisms (Kwak et al., 2019). Second, the data presented here highlights the significance of reflective capacity as a potential mediator in the

relationship between resilience and technostress among social work students. As a result, researchers are encouraged to investigate the mediating effects of reflective capacity on other characteristics among social work students. Practitioners should also develop and apply strategies that aim to foster reflective capacity among social work students such as the case method (an integral component of legal and business education) (see e.g., Rosier (2022)) in which learners analyze real or hypothetical cases intersecting technology use and social work practice. Students could use these cases to identify the issues, perspectives, assumptions, values and ethical dilemmas involved. They could also propose and justify possible actions based on theory and evidence. Furthermore, teachers can encourage students to maintain reflective journals where they write about their experiences, thoughts and emotions related to their academic journey, social work practice and technology use. Prior research evidence points out that journaling can promote students' reflective skills (Brown, Briscoe, & Grabowsky, 2022; Deveci & Wyatt, 2022).

Teachers may help students negotiate the challenges of technology in their academic and professional lives by introducing these reflective practices into social work education. Creating a culture of reflection and self-awareness can lead to a more resilient and adaptable cohort of social pedagogy students, better equipped to thrive in a technologically driven world. Future research can further investigate the effectiveness of these reflective practices and explore additional strategies to promote learners' well-being and stress management in social pedagogy.

8. Limitations

This study has limitations that should be recognized. First, it relied on cross-sectional data from a convenience sample of social work students from Kazakhstan who met specific criteria. Therefore, the results may not be generalizable to other populations or contexts. Future studies should use longitudinal data from representative samples of social work students from different countries or regions varying in their characteristics. Expanding the sample to include students from different regions and backgrounds could increase the external validity of the results.

9. Conclusion

This research suggested meaningful discoveries into the interplay between resilience, technostress and reflective capacity among social work students. The present study has shown that lower levels of technostress are predicted by higher levels of resilience and this relationship may be partially mediated by reflective ability. Therefore, one can expect that students' engagement in self-reflection can foster their resilience leading to better coping with technostress and improving their overall well-being in their academic and professional settings. The knowledge of resilience, technostress and reflective ability among social work students is expanding due to this study. The findings underscore the importance of reflective practices in promoting well-being and stress management in the context of technology use within social pedagogy. However, researchers should be aware of the study's limitations and plan future studies to expand on these findings and widen the scope of knowledge in this field.

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