Psychological stress and psychological well-being of students: The impact of self-disclosure and loneliness

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ABSTRACT

Mental health is a crucial factor in maintaining and enhancing the quality of life, particularly in the educational context. This study investigated the impact of psychological stress on the psychological well-being of students, with a focus on the self-disclosure factor. In addition, the study also examined the moderating effect of loneliness on relationships within the research model, a factor that previous studies have not considered. The research model was evaluated using the Partial Least Squares Structural Equation Modeling (PLS-SEM) method, with 507 observations, indicating that the self-disclosure mediating factor has a positive impact on students' psychological well-being. On the other hand, the study found that loneliness and psychological stress have a close relationship in affecting self-disclosure. From these results, the study will propose managerial implications and related solutions.

1. Introduction

Life pressure has become an inherent feature of the modern context. The consequence of increasing pressure is that psychological stress appears continuously with high intensity in all aspects of social life, continuously weakening and affecting each individual's health, spirit, and quality of life. Mental pressure arises from imagining, thinking, and evaluating possible threats, creating pressure beyond the human balance (Gianaros & Wager, 2015). In particular, educational psychology research streams are focusing on addressing the prolonged stress experienced by university students. Sometimes, mild stress catalyzes overcoming difficulties and challenges (Travis et al., 2020). However, if stress factors persist, they cause mood disorders, which ultimately affect mental health (Grzywacz & Bass, 2003). At the same time, for educators, addressing students' psychological problems will help create a deeper insight into learning attitudes and outcomes. As a consequence, psychological well-being is increasingly explored to curb or resolve negative mental states.

According to Li and Hasson (2020), psychological well-being is not simply an emotional state, but also a multidimensional structure that encompasses the perception and evaluation of satisfaction and the meaning of life from an objective perspective. However, before achieving happiness, individuals must overcome negative problem thinking. One way to help individuals balance and cope better with stress is through the process of self-disclosure, which can help relieve internal problems. From there, individuals who tend to self-disclose will be better able to coordinate their psychological stress to achieve more effective psychological well-being.

However, when left untreated, loneliness can develop and lead to individuals becoming socially isolated. Chronic loneliness and stress are increasingly recognized as public health concerns (Surkalim et al., 2022) and risk factors for mental disorders (Mann et al., 2022). Although numerous studies have investigated the relationship between self-disclosure and loneliness, the findings have been inconsistent. Forest and Wood (2012) found that self-disclosure has been shown to reduce stress when supported by positive social relationships. However, if not responded to positively, self-disclosure can lead to feelings of rejection, increased loneliness, and decreased well-being. Furthermore, chronic loneliness is not only recognized as a risk factor for mental disorders but also impairs effective self-disclosure, thereby affecting positive psychological well-being (Surkalim et al., 2022).

Therefore, this study examines the mechanism of self-disclosure as a mediator of the relationship between psychological stress and happiness in students. Furthermore, the investigation also examines how individual loneliness affects the relationship between psychological stress, self-disclosure, and psychological happiness. Based on the research results, managerial implications are proposed, helping educational managers in particular and psychologists in general to gain a more comprehensive and specific understanding, aiming to promote a balance between individual health, lifestyle, and overall happiness. This is the basis for the early implementation of positive solutions to contribute to building a healthy mentality and forming new potential relationships.

2. Theoretical basis

2.1. Emotion regulation theory

Heuven et al. (2006) developed the Emotion Regulation Theory (ERT) to identify factors influencing the relationship between behavior and emotion. Within the context of focusing on situational responses, self-control ability can regulate emotions by trying to change any emotional component. Individuals with the ability to regulate emotions demonstrate a more substantial experience of well-being (Andretta & McKay, 2020). ERT was applied in the study to analyze further the factors that influence each individual's ability to self-regulate emotions, thereby affecting psychological health, specifically loneliness and the choice of self-disclosure.

2.2. Social penetration theory

Altman and Taylor (1973) developed this theory to describe people with different personality dimensions or ranges. The participants' characteristics, the outcome of the exchange process, the level of self-disclosure, and the situational context are three other factors that SPT focuses on. The exchange process and disclosing attitudes, personal characteristics, opinions, and emotions are key to developing social relationships (Altman & Taylor, 1973). Such acts of sharing thoughts are always closely related to improving and enhancing psychological health (Willems et al., 2020). In the context of this study, SPT serves as the foundation for arguing the relationship between self-disclosure and students' psychological well-being.

2.3. Self-disclosure

Self-disclosure refers to the act of revealing information about oneself to others (Jourard, 1971). Any message about oneself that an individual communicates to others is considered self-disclosure (Luo & Hancock, 2020). Expressing one's thoughts and feelings to others is a fundamental social skill for enhancing interpersonal relationships (Altman & Taylor,

1973). Self-disclosure is motivated by the need for self-expression, self-clarification, relationship development, and social validation (Waters & Ackerman, 2011). Disclosure topics can be categorized as "descriptive self-disclosure," which includes information and facts about oneself, or "evaluative self-disclosure," which involves expressing feelings, judgments, or feeling states (Derlega et al., 1993).

2.4. Psychological well-being

Psychological well-being has been conceptualized as a core characteristic of mental health. This broad, multifaceted construct encompasses a variety of positive mental states and the pursuit of a balanced life (Ryff & Keyes, 1995). It is considered a comprehensive, reflective assessment of an individual's well-being (Nica et al., 2016). This assessment is not influenced by context or objectivity (Wang et al., 2020). Psychological well-being includes regulating mood, controlling emotions, coping with stress, and resisting negativity (Houben et al., 2015).

2.5. Psychological stress

Psychological stress refers to the perception of stress and pressure that individuals experience from various sources, such as life events (Kuo et al., 2019). It is the mechanism by which people feel when they are in a negative state that has psychological and mental effects. Individuals who experience high levels of stress report lower levels of life satisfaction (McCullough et al., 2000). Although the stress response is necessary for life, the inability of the subject to cope with the stressor can lead to psychological and physiological responses (Cruces et al., 2014).

2.6. The relationship between psychological stress and self-disclosure

Traditional studies have noted that life stress is a factor contributing to self-disclosure (Stiles, 1987). Sharing about a stressful event can reduce the anxiety associated with it (Lepore et al., 2000). Stiles (1987) suggested that people tend to disclose more when distressed. Conversely, people with low levels of psychological stress disclose less (Stiles et al., 1992). In addition, McKenna and Bargh (2014) showed the opposite-that psychological stress and anxiety increase as individuals share their emotions less through conversation. This suggests that the relationship between psychological stress and self-disclosure may not be straightforward but is somewhat influenced by various other factors. From this, this study argues that:

H1: Psychological stress positively affects self-disclosure

2.7. The relationship between self-disclosure and psychological well-being

Ho et al. (2018) observed a positive association between self-disclosure and several health indicators in their study. Sharing negative thoughts and issues is always associated with improved mental health (Pennebaker, 1995). In contrast, withdrawal and lack of disclosure lead to increased rumination, which creates psychological stress. Current evidence suggests that self-disclosure and psychological sharing trigger a net effect on negative psychological states, making individuals feel more optimistic than at other times (Choi & Toma, 2014). When individuals engage in self-disclosure and share about themselves, they relieve their emotions and receive feedback from others. This process enhances happiness and significantly improves mental health (Zhang, 2017). At the same time, Valkenburg and Peter (2009) pointed out that self-disclosing personal issues has a significant impact on psychological well-being. From this, the study proposes the hypothesis:

H2: Self-disclosure positively affects psychological well-being

2.8. Loneliness

Loneliness is recognized as a common mental health outcome (Luchetti et al., 2020). In this regard, the inability to connect with others and express genuine emotions is a key characteristic of this emotional state (Buecker et al., 2020). People with mental health problems and social anxiety often tend to want someone to listen and want to confide in the difficulties they are suffering (Small, 2017). When caught in a pressure cycle, they tend to seek relief through self-disclosure. Therefore, the unhealthy and stressful psychological state of loneliness will tend to motivate individuals to speak out about their problems more strongly (Cacioppo & Patrick, 2008).

On the other hand, people who do not disclose are often more stressed and vulnerable to the damage caused by mental health problems. Instead of fierce competition, students tend to share and support one another more (Felten & Lambert, 2020). This age group is also assessed to have a strong desire to connect. Therefore, when students feel lonely, under pressure, and experiencing psychological stress, they often confide in others about these feelings. Through this, the study argues that:

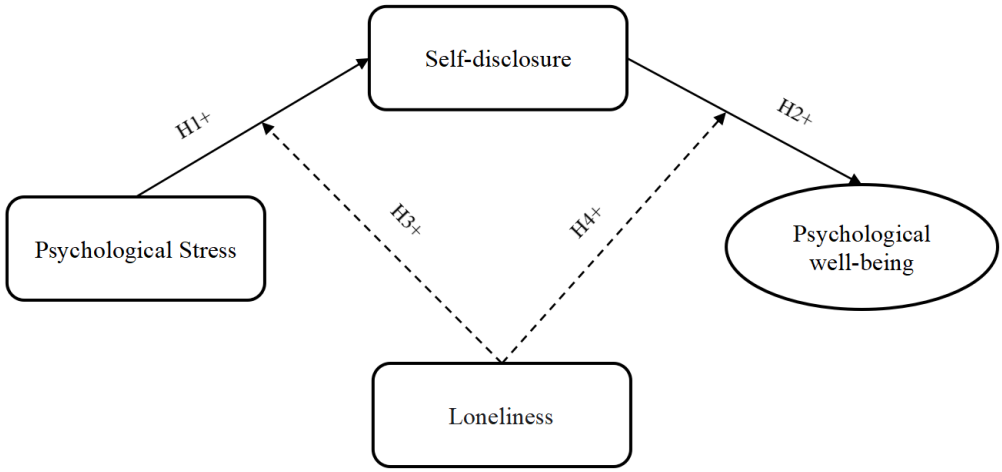
H3: Loneliness positively moderates the relationship between psychological stress and self-disclosure

The evidence that young people tend to be lonely has been previously studied (Lauder et al., 2006). Loneliness can occur whether they spend time in social activities or alone (Hawkley et al., 2003). In particular, loneliness can be exacerbated by the absence of self-disclosure or emotional sharing. Therefore, self-disclosure of thoughts and feelings is vital in improving positive psychological well-being. According to the Social Penetration Theory (Altman & Taylor, 1973), loneliness prompts individuals to yearn for the quality and stability of social relationships. Moreover, interpersonal connection is a fundamental human need (Baumeister & Leary, 2017), and psychological well-being is essential. This drives self-disclosure, making lonelier students more likely to engage in it, which may strengthen its positive impact on psychological well-being. Therefore, the study predicts that:

H4: Loneliness negatively moderates the relationship between self-disclosure and psychological well-being

Figure 1

Proposed Research Model



Note. Data analysis results of the research team

3. Methodology

The quantitative research method was used in this study. After reviewing previous studies, this study adopted the related concepts. Specifically, the study employed the Psychological Well-being Scale developed by Diener (1984). The idea of "psychological stress" was introduced by Cohen and Herbert (1996), and the concept of "loneliness" was defined by Tiwari (2013).

Data were collected through a survey of university students selected by the convenience sampling method. This method was chosen for its feasibility and efficiency in preliminary research. The sample was diversified by academic discipline, study year, and birth cohort to reduce randomness and improve generalizability. Since the study focused solely on university students, the findings remain relevant to this group. While convenience sampling may introduce biases, the results still provide valuable insights into the issue. The study employed a 7-point Likert scale, where 1 represents "Strongly disagree" and 7 means "Strongly agree." The data were collected from May 2024 to June 2024, comprising 507 observations, with 88.8% of students studying and 11.2% of recent graduates.

This study employs Partial Least Squares Structural Equation Modeling (PLS-SEM) for data analysis. PLS-SEM is selected over Covariance-Based SEM (CB-SEM) due to its ability to handle non-normally distributed data, thereby eliminating the need for the normality assumption (Kock, 2016). Furthermore, it effectively accommodates both Reflective and Formative Measurement models, offering enhanced flexibility in the model specification (Hanafiah, 2020). Additionally, PLS-SEM demonstrates robustness in analyzing small sample sizes while mitigating the risk of variance prediction errors (Hair et al., 2021b). Given its strengths, PLS-SEM is particularly advantageous in applied research contexts, where predictive accuracy and model optimization take precedence over strict parameter estimation, as emphasized in prior studies (Hair et al., 2021a; Riou et al., 2016).

The model was analyzed in two stages. The first stage focused on assessing the reliability of the measurement scale. It involved evaluating Cronbach's Alpha (α), Composite Reliability (CR), Average Variance Extracted (AVE), outer loading (λ), and discriminant validity (HTMT). Meanwhile, the second stage assessed the structural model by examining multicollinearity (VIF), the statistical significance of hypotheses, the model's explanatory power (R^2, f^2), and its predictive ability (Q^2).

4. Results and discussion

4.1. Sample

Most respondents were female (74%), and the remaining 26% were male students. The survey subjects were students from universities in Ho Chi Minh City, with the following distribution: 1st year, 31%; 2nd year, 13.2%; 3rd year, 21.7%; 4th year and above, 22.9%; and recent graduates, 11.2%. The majority of majors, 59.2%, were in Economics and Management, while Social Sciences and Humanities accounted for 27%, Natural Sciences and Engineering for 11.2%, and Medicine and Health for 2.6%.

4.2. Measurement model assessment

Table 1

Measurement Model Evaluation Criteria

Concept	λ	α	CR	AVE	(1)	(2)	(3)	(4)
Loneliness (1)	0.743 - 0.862	0.945	0.953	0.693	-			
Psychological well-being (2)	0.752 - 0.825	0.905	0.923	0.601	*0.076*	-		
Psychological stress (3)	0.774 - 0.821	0.886	0.913	0.637	*0.615*	*0.167*	-	
Self-disclosure (4)	0.707 - 0.825	0.874	0.905	0.615	*0.454*	*0.416*	*0.469*	-

Note. Data analysis results of the research team

According to Hair et al. (2019), a measure has high reliability when the coefficient α and CR have values greater than 0.7. Based on Table 1, the research model has highly reliable scales because the values are all significantly greater than 0.7. Specifically, the α value ranges from 0.874 to 0.945, and the CR from 0.905 to 0.953. Thus, the measures of the research concepts all achieve satisfactory reliability.

The check of convergent validity is based on AVE and λ (Götz et al., 2009). These coefficients need to explain at least 50% of the variance between these observed variables and the remaining variables to demonstrate the level of reliability. Thus, outer loadings must be greater than 0.7 to be considered satisfactory, and AVE must be greater than 0.5 (Sarstedt et al., 2022). Table 1 shows that the λ values range from 0.707 to 0.862, and the AVEs range from 0.601 to 0.693.

The Fornell-Larcker matrix has always been the criterion for assessing discriminant validity. However, the conceptual validity and empirical basis of the above criteria are questioned (Franke & Sarstedt, 2019). Therefore, HTMT is proposed to consider discriminant validity more accurately (Henseler et al., 2015), and discriminant validity will be guaranteed when its values are less than 0.85. Table 1 presents the HTMT values (italicized numbers) ranging from 0.076 to 0.615, indicating good discriminant validity between the latent variables in the model.

4.3. Structural model evaluation

The VIF index evaluates the degree of exaggeration in how variables interact, also known as multicollinearity. If this index is less than 5, it can be concluded that multicollinearity does not significantly affect the analysis results (Hair et al., 2019). In Table 2, the VIF of all variables meets the requirement below the allowable threshold.

The determination coefficient (R^2) explains the degree of dependence of variables. R^2 ranges from 0 to 1, with values approaching 0 indicating low levels of dependence of the dependent variable and approaching 1 indicating a high level of dependence. Here, self-disclosure is explained best because it has the highest value of 0.272, then gradually weakens to a value of 0.203, indicating psychological well-being.

Table 2

Structural Model Evaluation Criteria

Concept	VIF	R^2	Adjusted R^2	Q^2	RMSE
Loneliness	2.064 - 3.723	-	-	-	-
Psychological well-being	1.894 - 2.534	0.203	0.198	0.105	0.951
Psychological stress	1.998 - 2.152	-	-	-	-
Self-disclosure	1.492 - 2.523	0.272	0.267	0.245	0.872

Note. Data analysis results of the research team

Compared to R^2, adjusted R^2 yields more suitable results because it does not require any increase or decrease when adding other independent variables to the model. Therefore, the independent variable can provide a more accurate explanation of the dependent variable. In Table 2, the adjusted R-squared values for psychological well-being and self-disclosure are 0.198 and 0.267, respectively. This indicates that loneliness and psychological stress explain 19.8% of the variation in psychological well-being and 26.7% of the variation in self-disclosure.

Table 3

Hypothesis Testing

Relationship	β	P-value	Result
Psychological stress → Self-disclosure	0.302	0.000	Accepted
Self-disclosure → Psychological well-being	0.447	0.000	Accepted
Loneliness * (Psychological stress → Self-disclosure)	0.198	0.000	Accepted
Loneliness * (Self-disclosure → Psychological well-being)	0.127	0.028	Accepted

Note. Data analysis results of the research team

The study conducted a bootstrapping test (N = 5,000) to examine the relationship between the factors. In Table 3, all hypotheses were statistically significant at a 95% confidence level (P-value < 0.05). In which the results of psychological stress affected self-disclosure (β = 0.302) and self-disclosure affected psychological well-being (β = 0.447). When psychological stress increases, students tend to disclose more about themselves, which in turn enhances their psychological well-being. Thus, they had a positive relationship, which satisfied the hypothesis of a positive impact, thereby accepting hypotheses H1 and H2.

Furthermore, loneliness diminishes the positive relationship between psychological stress and self-disclosure, as indicated by a beta coefficient of 0.198 (H3). This suggests that individuals who experience loneliness tend to exhibit a stronger reaction to psychological stress by engaging in self-disclosure, sharing their emotions or personal thoughts as a coping mechanism (H3). Furthermore, with a positive β coefficient (0.127), loneliness strengthens the relationship between self-disclosure and psychological well-being (H4), enabling lonely individuals to improve their mental state by sharing emotions, seeking connections, and gaining social support to alleviate stress. Therefore, hypotheses H3 and H4 are supported.

For the structural model to be more accurate in prediction, the Q^2 values of the dependent variable should be greater than 0. Based on Table 3, Q^2 displays positive values,

indicating that PLS-SEM yields minor prediction errors (Shmueli et al., 2019). Another indicator confirming this is the comparison of RMSE values, which all meet the required thresholds. Based on the results from PLS-predict, it can be concluded that the proposed research model demonstrates a moderate level of predictive ability.

4.4. Discussion

The study results are consistent with the theoretical system. The psychological stress of an individual causes negative moods and emotions. This state is the premise for emotions to increasingly interfere with behavior increasingly and lead to difficulty controlling it. With humans' self-protection mechanism and recovery tendency, they tend to release pressure to the outside to reduce the burden on the spirit. According to Chan (2021), self-disclosure mitigates most of the adverse effects of psychological stress by helping to balance the positive and negative thinking content within an individual's thought process. This result is also consistent with the previous views of Mishra et al. (2023) and those of Dutton and Sotardi (2023). Accordingly, when an individual feels that they are under pressure, their willingness to self-disclose becomes stronger.

The consequences of revealing oneself to others, or even self-disclosing in some exceptional cases, will make individuals feel that they are being cared for. Most types of psychological pressure stem from difficulties in social relationships, and social interaction also helps alleviate these pressures. At the same time, finding a partner to share with is not simply a one-way flow of information. On the contrary, individuals can also seek interaction and objective perspectives to find solutions that correspond to their problems. Based on this positive information, overly strong psychological fluctuations will be regulated and directed towards a state of happiness. This result is consistent with the findings of Wei et al. (2018).

However, as presented, social relationships are the leading cause of stress for individuals. Loneliness prompts individuals to share their problems with others because people often reach the limits of their tolerance when it appears. Individuals who feel lonely will experience more severe psychological pressure because it makes people think they are lost, and problems in social relationships tend to be more serious. Therefore, the stronger the tendency to be lonely, the higher the need to relieve pressure. When people realize they are falling into a state of loneliness, they tend to communicate more with the outside world to seek help. Accordingly, H3 is accepted, as it aligns with the findings of Luo and Hancock (2020) and Follmer et al. (2020).

The results of hypothesis H4 are similar to the argument. According to the Social Penetration Theory (Altman & Taylor, 1973), loneliness prompts individuals to yearn for the quality and stability of social relationships. Additionally, the desire for interpersonal attachment is considered a fundamental human motivation (Baumeister & Leary, 2017). However, in this context, the development of social networks helps students and people in general access many channels that can help and quickly relieve pressure. In other words, students significantly mitigate the impact of loneliness through their diverse and multifaceted social relationships.

5. Conclusions and recommendations

This study aims to address stress-related issues among college students and contribute to the field of educational psychology. Additionally, it provides more profound insights into real-world environments and the psychological challenges individuals commonly face daily. Although recent studies on psychological conditions frequently focus on the disclosure of

psychological stress through online platforms or social networking sites to alleviate negative emotions (Chu et al., 2023; Yue et al., 2023), few investigate the disclosure of psychological stress directly in real-life environments. The results of this study show that the factors of psychological stress, disclosure, and loneliness combined will be the fundamental factors for creating psychological well-being in people with mental health problems. The data show that loneliness plays a moderating role in the positive relationship between psychological stress and self-disclosure. Psychological stress has been shown to significantly affect disclosure through numerous thorough studies (Zhang, 2017).

The research gives universities a specific and general view of the psychological stress problems that students are currently suffering from. Universities can reduce the rate of students suffering from mental health problems by creating an environment with a strong team spirit. Implementing dynamic and comfortable events allows students to connect and relieve their feelings of stress and loneliness. This study also proposes essential implications for the construction and promotion of healthy and sustainable educational development. Educators will be interested in and suggest ways to reduce loneliness and psychological stress for each student. Therefore, these policies create a healthy academic environment.

Universities should enhance and implement effective support measures to alleviate psychological pressure on students, thereby fostering effective learning in the training and teaching environment. This also promotes students' psychological well-being and enhances their ability to manage emotions effectively. It also encourages connections between teachers and students, creating a sense of joy and harmony that enables them to share and express their feelings easily, ultimately promoting psychological well-being among all group members.

The study has certain limitations. First, the surveyed participants were students from specific universities, which may not fully represent the broader student population. In the future, further studies should focus on other groups of subjects or age groups to examine whether the results in that group are similar or will change. Second, this is a prevalence study, which can be addressed by collecting data at different times and diversifying the survey subjects within a short research period. Third, the survey sample was collected using a non-probability sampling method. This makes the input of the data more difficult to control.

SCIENTIFIC CONTRIBUTION

The manuscript clearly identifies a research gap; the manuscript extends and refines existing theories; the manuscript proposes a new theoretical and analytical model; the manuscript provides new datasets and empirical evidence; the manuscript presents statistically and practically significant findings; the manuscript offers policy/managerial/technological implications; the manuscript opens new directions for further research.

AUTHOR CONTRIBUTIONS

CRediT: **Nguyen Thu Le Huyen**: Investigation, Writing - Original Draft, Writing - Review & Editing, Supervision; **Trinh Thi Hong Tham**: Software, Formal Analysis, Investigation; **Le Thi Thanh Thuy**: Investigation, Conceptualization, Writing - Original Draft; **Tran Phan Khanh Vy**: Conceptualization, Writing - Original Draft, Writing - Review & Editing; **Pham Phuong Quynh**: Methodology, Writing - Original Draft, Formal Analysis; **Nguyen Thuy Lan Anh**: Supervision, Validation, Writing - Review & Editing; **Pham Minh**: Conceptualization, Formal Analysis, Supervision, Writing - Review & Editing.

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NO CONFLICT OF INTEREST STATEMENT

All authors declare that they have no conflict of interest.

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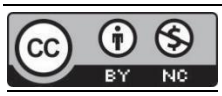

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