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ORIGINAL RESEARCH

Serve Yourself or Serve Your Students? How and When Supervisor Narcissism is Related to Mental Health of Graduate Students

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Background: The mental health of graduate students is increasingly turning into one of the main issues in global health. Understanding the antecedents of graduate students' mental health and finding ways to improve the situation are crucial for the students and the entire educational system.

Purpose: This study explores the relationship between supervisor narcissism and graduate students' mental health. Additionally, the study examines the mediating effects of mentorship styles (relationship-oriented and task-oriented) and the moderating role of student's proactive personality.

Methods: This study conducted a three-wave survey, with each wave administered at four-month intervals, involving 547 graduate students. They completed questionnaires on supervisor narcissism, mentorship styles, proactive personality, and mental health. SPSS 26.0 was used to test our hypotheses.

Results: This study indicated that: (1) Supervisor narcissism was negatively associated with graduate students' mental health, fully mediated by relationship-oriented and task-oriented mentorships; (2) Graduate students' proactive personalities moderated the relationship between these mentorship styles and their mental health; (3) Graduate students' proactive personalities moderated the indirect effect of supervisor narcissism on students' mental health through these mentorship styles.

Conclusion: This study reveals the detrimental mechanisms through which supervisor narcissism affects graduate students' mental health. It also demonstrates that enhancing students' proactive personalities can mitigate these adverse effects. These findings provide empirical evidence within the context of higher education. Practical implications are provided for supervisors, students, and university administrators, emphasizing the importance of effectively matching supervisors with students and promoting students' proactive personalities. These measures are essential for improving the mental health of graduate students.

Keywords: supervisor narcissism, mental health, mentorship style, proactive personality

Introduction

In recent years, research has increasingly shown that graduate students are facing significant psychological distress and mental illness.[1,2] A 2018 global survey found that 41% of graduate students reported moderate to intense anxiety, while 39% reported moderate to intense depression, with these rates being six times higher than those in the general population.[3] Similarly, a 2019 *Nature* survey revealed that 36% of graduate students were struggling with mental health challenges like anxiety and depression.[4] These statistics underscore the severity of mental health concerns in this group, which not only affect their quality of life[4] but also hinder scientific progress and social development.[5] Given the essential role of mental health, researchers are increasingly focusing on identifying the antecedents of graduate students' mental health. This focus is vital for developing effective interventions that benefit students and the education system.[6]

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Numerous studies have explored how individual factors, such as perfectionism,[2] workaholism,[7] and resilience,[8] impact graduate students' mental health. As researchers increasingly recognize the importance of supervisors, attention has shifted to the influences at the supervisory level.[6] This focus includes supervisory behaviors like support[8,9] and guiding feedback,[10] as well as the supervisor-student relationship.[11] These studies have indicated that supervisors can significantly affect students' well-being.[12] However, the influence of supervisor personality traits remains largely unexplored. Supervisor traits may profoundly impact graduate student development, as they fundamentally shape supervisory behaviors and the quality of interpersonal relationships.[13] Without a deeper understanding of this issue, it will be challenging to fully grasp the long-term effects of supervisors on graduate students' mental health. This gap may result in superficial interventions that fail to address underlying causes, potentially exacerbating the persistent adverse effects on students' well-being. Therefore, it is crucial to investigate this area further. We aim to offer a more robust theoretical foundation for improving students' mental health and enhancing the supervisor-student relationship.

Higher education institutions typically have a hierarchical structure, where supervisor-student interactions are primarily centered around the supervisor.[14] This dynamic creates a significant power imbalance, particularly pronounced in Chinese higher education.[12,15] In this context, self-interested supervisors may pursue their own goals at the expense of their students' well-being.[16] The narcissistic personality is typically characterized by self-centeredness and self-interest.[17] Prior studies have indicated that narcissistic individuals are more likely to exhibit self-interested behaviors when they hold greater power, potentially harming the well-being of the powerless.[17] This phenomenon has been validated in leader-subordinate interactions in the workplace.[18] However, the impact of supervisor narcissism on graduate students' mental health in higher education remains unexplored.

The graduate mentorship system establishes a unique supervisor-subordinate relationship between graduate students and their supervisors.[19] As the primary overseers, supervisors hold significant power in guiding students, assigning tasks and resources, evaluating performance, and providing compensation, similar to workplace leaders.[20] Moreover, the supervisor-student relationship has unique aspects, such as salient pursuit on academic achievements and greater power asymmetry.[14] These factors amplify top-down influences[20] and may compel students to silently submit to negative outcomes.[21] Therefore, it is crucial to examine how supervisor narcissism affects graduate students' mental health. Neglecting this issue could lead to lasting adverse consequences for student well-being and the development of the academic environment.[6]

We employ the Job Demands-Resources (JD-R) model as a framework to better understand this issue. This model posits that work environments are defined by job demands and job resources, which significantly affect an individual's well-being.[22] Narcissistic supervisors foster a "high-demand and low-resource" environment for students, which may adversely affect their mental health. However, graduate students' proactive personalities can serve as a valuable job resource, potentially buffering against these adverse effects.[23] Grounded in JD-R theory, this study aims to explore how supervisor narcissism affects graduate students' mental health in Chinese higher education through a three-wave survey. We also explore the mediating mechanisms and boundary conditions that underlie these effects.

The current study contributes to the existing literature in several ways. First, previous research has largely overlooked the role of narcissism in supervisor-student interactions. This study specifically focuses on supervisor narcissism and examines its impact on graduate students' mental health, thereby expanding the application scope and nomological network of narcissism. Second, our study explores the antecedents of graduate students' mental health from an innovative perspective on supervisor personality, deepening our understanding of this issue. Additionally, we identify the mediating roles of task-oriented and relationship-oriented mentorship. This finding expands the JD-R model and provides new insights into the supervisor-student dynamics. Finally, based on the JD-R model, the study explores how graduate students' proactive personalities moderate the effects of supervisor narcissism, highlighting the importance of student initiative in their development. These findings offer new perspectives and empirical support to the literature, along with practical implications for supervisors, graduate students, and higher education institutions to enhance student growth and development. Given the widespread power imbalance in supervisor-student relationships,[15] the impact of supervisor narcissism on student mental health is a common issue in interpersonal power dynamics. Although the study focuses on the Chinese context, its findings may provide valuable insights for educational systems in other cultures.

Theoretical Analysis and Hypotheses

Theoretical Framework

The Job Demands-Resources (JD-R) model is a widely recognized framework within organizational behavior research.[22] This theory posits that job demands and resources shape the work environment, with their dynamic interaction significantly influencing individual well-being and performance.[22] Job demands refer to elements that require sustained physical and mental effort, often at a cost to the individual. In contrast, job resources are those that support goal achievement, alleviate the stress associated with job demands, and promote personal growth and fulfillment.[24]

As researchers have noted, future research should expand the scope of demands and resources beyond the traditional workplace context.[22] In this study, supervisor narcissism and its related behaviors are viewed as job demands due to their core traits, such as self-interest, demeaning others, and a disregard for others.[25] These traits can deplete graduate students' resources and increase their psychological stress,[26] potentially leading to mental health problems. In contrast, graduate students' proactive personality, a positive trait that promotes personal development, can be considered a vital job resource.[23,27] Therefore, a proactive personality can help graduate students obtain social and psychological resources, thereby alleviating the negative impacts of supervisor narcissism.

Supervisor Narcissism and Graduate Students' Mental Health

Narcissism is defined as "a personality trait encompassing grandiosity, arrogance, self-absorption, entitlement, fragile self-esteem, and hostility".[28] It is prevalent in the general population and not limited to clinical diagnoses.[29] Due to their self-centered nature,[25] narcissists tend to use their power to exhibit selfish behaviors when they assume leadership roles, adversely affecting their subordinates' well-being and performance.[16,17] Given the unique power dynamics between supervisors and graduate students, this study focuses on supervisor narcissism and examines its effects on students' mental health.

The core traits of narcissists include self-centeredness,[25] a tendency to exploit others for personal gain, disregard for others' feelings, and a consistent need to suppress those around them.[30] Drawing on the JD-R model, we propose that supervisor narcissism creates a "high-demand and low-resource" environment for graduate students,[22] which may negatively impact their mental health. First, such supervisors may lead students to perceive a heightened risk of exploitation, leading to distrust in the student-supervisor relationship.[31] This hostile environment triggers negative emotions and diminishes students' psychological security.[31,32] Second, when supervisors act selfishly and compromise students' interests, students may feel disrespected and devalued,[31,32] further intensifying negative emotions.[26] Finally, a chronic lack of positive feedback can cause feelings of worthlessness, undermine self-esteem,[33,34] and increase the risk of depression and anxiety.[26] In summary, the self-centered tendencies of narcissistic supervisors elevate the demands placed on graduate students, such as increased work pressures and higher expectations, while failing to provide necessary support and resources. Based on the JD-R model, this imbalance may heighten psychological distress, ultimately harming students' mental health.[22] Thus, we propose that:

Hypothesis 1: Supervisor narcissism negatively relates to graduate students' mental health.

Mediating Role of Mentorship Styles

Previous research has suggested that narcissistic superiors may exhibit specific attitudes and behavioral tendencies, which could uniquely affect their subordinates.[13] Considering supervisory behavior as explicit cues that shape students' perceptions, we suggest that the mentorship styles explain the relationship between supervisor narcissism and graduate students' mental health. Given the power imbalance between supervisors and graduate students,[12] we adopt leadership styles to represent mentorship styles. Drawing on the JD-R model, we focus on two leadership styles divided from the focus of leader, task-oriented and relationship-oriented leadership.[35] These styles are closely linked to task performance and interpersonal relationships, aligning with the core principles of the JD-R model.[22]

Due to their different focuses, these two leadership styles exhibit distinct characteristics.[35] Relationship-oriented leadership prioritizes building positive interpersonal relationships, emphasizing subordinates' feelings and fostering a supportive team atmosphere,[36] which demonstrates leaders' empathy.[37] In contrast, task-oriented leadership emphasizes

task completion and supervising subordinates' progress.[38] These supervisors coordinate their team's work and establish reward and punishment systems to assess performance and promote teamwork.[38]

However, narcissistic individuals are excessively self-centered, prioritizing their own interests over the feelings of others or the growth of the organization.[17] Consequently, highly narcissistic supervisors are unlikely to invest significant effort in guiding and organizing students' work, nor do they care about students' feelings. These tendencies conflict with both relationship-oriented and task-oriented mentorship styles. Thus, we propose that:

Hypothesis 2a: Supervisor narcissism negatively relates to supervisor's relationship-oriented mentorship.

Hypothesis 2b: Supervisor narcissism negatively relates to supervisor's task-oriented mentorship.

Positive mentorship styles are crucial protective factors for graduate students' mental health.[39] Previous research has indicated that both relationship-oriented and task-oriented leadership significantly predict positive mental health outcomes among subordinates.[40] These leaders provide support to help subordinates overcome obstacles.[36,38]

Specifically, task-oriented leaders provide support and guidance focused on achieving work goals. First, they establish clear tasks and objectives, helping subordinates understand their work direction and responsibilities.[38] This clarity reduces confusion, enhances work efficiency, and fosters a positive attitude.[41] Second, they implement a reward and punishment system to offer timely feedback and incentives based on subordinates' performance.[38] This approach boosts job satisfaction and a sense of accomplishment, positively impacting subordinates' mental health.

In contrast, relationship-oriented leaders focus on supporting subordinates' social and personal needs. First, they establish positive interpersonal relationships and create a trusting atmosphere,[42] which reduces subordinates' work stress and enhances their psychological safety, sense of belonging, and well-being.[40] Second, they demonstrate empathy by recognizing subordinates' feelings,[43] offering positive feedback, and providing emotional support during challenging times.[42] This approach helps subordinates manage stress,[36] enhances their self-worth, and promotes mental health.

In summary, according to the JD-R model, supervisor narcissism and its associated behaviors can be considered job demands.[22] These tendencies may undermine support for students' psychological needs and academic development, increase their stress, and ultimately lead to mental health problems.[31] Specifically, narcissistic supervisors tend to provide lower levels of both relationship-oriented and task-oriented mentorship, which can negatively affect students' mental health. Thus, we propose that:

Hypothesis 3a: Relationship-oriented mentorship positively relates to graduate student's mental health.

Hypothesis 3b: Task-oriented mentorship positively relates to graduate student's mental health.

Hypothesis 4: Relationship-oriented and task-oriented mentorship play parallel mediating roles between supervisor narcissism and graduate student's mental health.

Moderating Role of Graduate Student's Proactive Personality

The proactive personality is defined as a trait characterized by the active pursuit of goals and overcoming challenges,[23] benefiting individuals' mental health in threatening and stressful situations.[27] According to the JD-R model, individuals can leverage their strengths to manage stressors and enhance work resources, thereby mitigating the adverse effects of job demands.[22] We propose that students' proactive personality, as a protective individual difference,[23] may moderate the negative effects on their mental health.

According to the JD-R model, job demands and resources combine to affect individuals' mental health.[22] As a critical job resource, a proactive personality helps graduate students maintain a positive attitude and reduce the negative impact of job demands.[27,44] Narcissistic supervisors typically exhibit limited relationship- and task-oriented behaviors, failing to support students' psychological needs and academic development adequately.[36] However, students with highly proactive personalities tackle challenges with a forward-thinking mindset, enabling them to confront obstacles and effectively manage external threats.[45] They take responsibility for their tasks and proactively establish trusting relationships with

others.[27] Additionally, they handle stress constructively by adapting and seeking support when necessary, fulfilling their internal needs and maintaining job satisfaction.[46] In contrast, individuals with low proactive personalities tend to maintain the status quo and passively respond to their circumstances, making them more vulnerable to severe stress and depression in challenging environments.[46] Consequently, students with low proactive personalities may require more guidance from task-oriented and relationship-oriented supervisors than those with high proactive personalities. Thus, we propose that:

Hypothesis 5a: Graduate student's proactive personality moderates the relationship between relationship-oriented mentorship and mental health, with the positive effect being stronger when proactive personality is low rather than high.

Hypothesis 5b: Graduate student's proactive personality moderates the relationship between task-oriented mentorship and mental health, with the positive effect being stronger when proactive personality is low rather than high.

The Moderated Mediating Effect

Drawing on the JD-R model, we propose a moderated mediation model to investigate how and when supervisor narcissism impacts graduate students' mental health (Figure 1). According to this theory, individuals can mitigate the negative impact of job demands by accessing job resources.[22] Narcissistic supervisors tend to be excessively self-interested, focusing little on students' work and feelings.[17] Consequently, they tend to offer lower levels of task-oriented and relationship-oriented mentorship, negatively affecting student's mental health. However, graduate students with highly proactive personalities are better equipped to respond positively to external threats.[45] Even when facing the adverse effects of narcissistic supervisors, these students can mitigate these effects by leveraging their social and psychological resources.[27] Thus, we propose that:

Hypothesis 6a: Graduate student's proactive personality moderates the indirect effect of relationship-oriented mentorship, with the indirect effect being stronger when proactive personality is low rather than high.

Hypothesis 6b: Graduate student's proactive personality moderates the indirect effect of task-oriented mentorship, with the indirect effect being stronger when proactive personality is low rather than high.

Methods

Participants

This study used a questionnaire method to collect data from graduate students at several universities in Southern China, which offer a wide range of academic disciplines. To reduce common method bias,[47] surveys were conducted at three
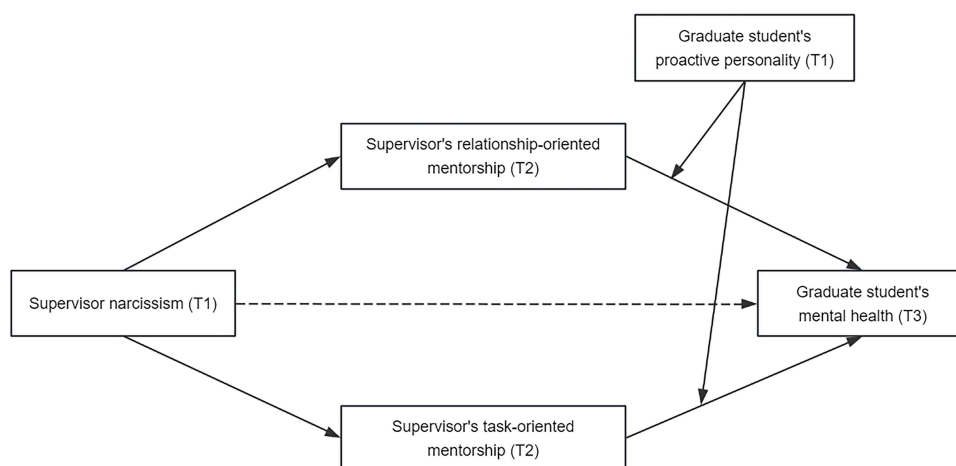
Figure 1 The Framework of the Present Study.

time points, each four months apart. Initially, researchers contacted the teachers of the Graduate Schools at these universities. With their assistance, we obtained a list of all full-time graduate students, including their email addresses and demographic information. To obtain a sample, we employed a simple random sampling method. A Python script generated a unique identification number for each full-time graduate student. We then utilized Python's random number generation tool to create 700 random numbers, selecting corresponding students from the complete list. This method ensured that each individual had an equal chance of being included, allowing us to quickly and effectively obtain a reasonably representative sample.[48] The large sample size and diverse respondent backgrounds further ensured the sample's generalizability. Ultimately, the selected sample included students of various ages, education types, and genders, reflecting a broad diversity among respondents.

Subsequently, we sent the survey link to students via email, explaining the study's purpose and assuring them that their personal details and responses would remain confidential. To maintain anonymity, we enlisted an external research assistant to link the survey responses across these time points, assign a new unique number to each respondent, and then remove all personal information. This method could ensure that the universities and the research team could not obtain any identifiable information about the respondents.

At time 1, 700 questionnaires were distributed. Respondents provided demographic information while rating their proactive personality and their supervisor's narcissism. After excluding those with data omissions and failed attention checks, 649 valid questionnaires were obtained, resulting in an effectiveness rate of 92.71%. Four months later (time 2), questionnaires were sent to the 649 students who completed the first survey. They provided ratings on their supervisor's mentorship styles. Following the same exclusion criteria, 585 valid questionnaires were obtained, with an effectiveness rate of 90.14%. Finally, at time 3, questionnaires were distributed to these 585 students to measure their mental health. 547 valid questionnaires were obtained, resulting in an effectiveness rate of 93.50%. Thus, the final valid sample size was 547, with an average age of 26.21 years (SD = 1.81), as detailed in Table 1.

Measures

Unless otherwise noted, items were rated on a 7-point Likert scale (1 = strongly disagree, 7 = strongly agree), with scores averaged to create a final score for each scale. All scales were presented in Chinese, following a rigorous back-translation procedure.[49] Specifically, two bilingual psychology professors independently translated the items into Chinese, while two additional professors back-translated them into English for comparison with the original versions. The research team reviewed and resolved any discrepancies to ensure accuracy and consistency. Finally, a cultural psychology professor evaluated the Chinese version for cultural appropriateness, ensuring its suitability for the Chinese context.

Table 1 Demographic Characteristics and Variable Descriptions

Variable	Sample		
	Category	Number	Percentage
Gender	Male	329	60.1%
	Female	218	39.9%
Age	21–25 years	224	41.0%
	26–30 years	307	56.1%
	31–35 years	14	2.5%
	36–40 years	2	0.4%
Education type	Professional master	280	51.2%
	Academic master	267	48.8%
Supervisor's academic title	Associate professor	159	29.1%
	Professor	267	48.8%
	Others	121	22.1%

Supervisor Narcissism

This study employed the narcissism subscale from Jonason and Webster's Dark Triad Measure,[50] which includes four items. To align with the study's focus, "I" in the original items was modified to "my supervisor" (eg, "My supervisor tends to want others to admire him/her"). A higher final score indicates a higher level of narcissistic personality in the respondent's supervisor. The Cronbach's α coefficient was 0.92.

Supervisor's Mentorship Styles

We measured task-oriented and relationship-oriented mentorship, as well as abusive and servant mentorship as control variables.

The supervisor's relationship-oriented mentorship was measured using the person-oriented skills subscale from the Supervisory Behavior Measure.[35] The scale includes four items (eg, "My supervisor is friendly and easy to approach"). According to the context of our study, "my leader" in the original scale was changed to "my supervisor". A higher final score indicates a higher level of relationship-oriented mentorship in the respondent's supervisor. The Cronbach's α coefficient was 0.96.

The supervisor's task-oriented mentorship was measured using the task-oriented skills subscale from the Supervisory Behavior Measure.[35] The scale includes four items (eg, "My supervisor emphasizes high standards of performance"). Similarly, "my leader" in the original scale was replaced with "my supervisor". A higher final score indicates a higher level of task-oriented mentorship in the respondent's supervisor. The Cronbach's α coefficient was 0.83.

Graduate Student's Proactive Personality

Proactive personality was measured using Parker and Sprigg's Proactive Personality Scale,[51] which contains four items (eg, "If I believe in an idea, no obstacle will prevent me from making it happen."). A higher final score indicates a higher level of proactive personality in graduate students. The Cronbach's α coefficient was 0.79.

Graduate Student's Mental Health

Graduate student's mental health was measured using the 20-item General Health Questionnaire (GHQ-20).[52] This scale comprises three dimensions: sense of adequacy, depression, and anxiety. Respondents provided their scores on a binary scale (0 = yes, 1 = no), with scale scores obtained by summing the responses for each item. In the original scale, a higher score indicates lower level of mental health. However, for this study, we reversed the scoring to better reflect the effects of other variables on mental health. Thus, a higher score now represents better mental health. The Cronbach's α coefficient was 0.82.

Control Variables

Based on the JD-R model, we identified task-oriented and relationship-oriented mentorship as mediating variables. However, mentorship styles are not limited to these two. To assess whether they serve as unique mediating mechanisms, we controlled for abusive and servant mentorship when examining the indirect effects. Previous research has shown that these two leadership styles represent extreme behaviors of leaders.[53,54] Narcissistic leaders are prone to abusive behavior towards subordinates, inducing their psychological stress.[55] In contrast, servant leadership emphasizes "service first" and focuses on the needs of subordinates, presenting an altruistic approach that sharply contrasts with the selfish nature of narcissistic personalities, thereby positively impacting subordinate development.[17] In summary, considering these two styles is crucial, as they may also mediate the relationship between supervisor narcissism and graduate student mental health. At time 2, we measured these mentorship styles using the 5-item Abusive Supervision Scale (Cronbach's α = 0.96)[56] and the 7-item Servant Leadership Scale (Cronbach's α = 0.93).[57]

Following previous research,[19] we also controlled for several demographic variables that might influence student's emotions and behaviors, including gender (0 = female; 1 = male), age, education type (0 = professional master, 1= academic master) and supervisor's academic title (0 = associate professor, 1 = professor, and 2 = others).

Data Analysis

All statistical analyses were carried out with SPSS version 26.0 and its PROCESS macro. PROCESS is widely recognized for its simplicity and effectiveness in handling complex models, including mediation, moderation, and moderated mediation effects, with its applicability validated in numerous studies.[58]

Before the analysis, we assessed the normality of all variables by calculating skewness and kurtosis through SPSS. The results indicated that the skewness values of all variables were less than 3, and the kurtosis values were less than 10. According to existing research, these variables can be accepted as approximately normally distributed.[59] In the subsequent analysis, we first checked for common method bias. Second, we calculated descriptive statistics and Pearson correlation coefficients. Third, we used Model 4 and Model 14 of the SPSS PROCESS to examine the mediating and moderated mediating effects with 5000 bootstrap samples.[58] After identifying a moderation effect, we further analyzed the simple slopes from the PROCESS output to explore the effects under different moderator conditions. Regression coefficients were evaluated through the Bootstrap technique for bias correction and percentile estimation. Prior to detailed analysis, all predictor variables were standardized.

Result

Confirmatory Factor Analysis

Before testing the hypotheses, we confirmed construct distinctiveness via confirmatory factor analyses (CFA) using Mplus 8.2. As shown in Table 2, the seven-factor model demonstrated a better fit to the data compared to other models (χ^2 (df = 1047) = 2610.306, CFI = 0.908, TLI = 0.901, RMSEA = 0.052, SEMR = 0.070), indicating acceptable construct validity.

Common Method Bias Test

Before testing the hypotheses, we conducted a collinearity test. The results indicated that the VIF values for all independent variables ranged from 1.166 to 1.580, well below the commonly accepted threshold of 10 for serious collinearity issues. Additionally, the tolerance values for all variables were greater than 0.1, indicating that no substantial common method bias exists in this study.[47]

Descriptive Statistics and Correlation Analysis

Table 3 presents the Pearson correlation coefficients and other descriptive statistics. As expected, supervisor narcissism was significantly negatively correlated with relationship-oriented mentorship ($r = -0.356$, $p < 0.001$) and task-oriented mentorship ($r = -0.104$, $p = 0.015$), as well as with graduate student's mental health ($r = -0.111$, $p = 0.009$). The relationship-oriented and task-oriented mentorship were positively correlated with student's mental health ($r = 0.357$, $p < 0.001$; $r = 0.147$, $p < 0.001$).

Table 2 Confirmatory Factor Analysis Results

Models	χ^2	df	χ^2/df	CFI	TLI	RMSEA	SRMR
1. Seven-factor model	2610.306	1047	2.493	0.908	0.901	0.052	0.070
2. Six-factor model	5491.821	1065	5.157	0.739	0.723	0.087	0.092
3. Five-factor model	5870.529	1070	5.486	0.717	0.701	0.091	0.094
4. Four-factor model	6940.755	1074	6.463	0.654	0.636	0.100	0.108
5. Three-factor model	7426.561	1077	6.896	0.625	0.607	0.104	0.111
6. Two-factor model	10140.193	1079	9.398	0.465	0.441	0.124	0.124
7. One-factor model	10764.662	1080	9.967	0.428	0.403	0.128	0.125

Notes: The seven-factor model = SN, ROM, TOM, MH, PP, AM, SM. The six-factor model = SN + ROM, TOM, MH, PP, AM, SM. The five-factor model = SN + ROM + TOM, MH, PP, AM, SM. The four-factor model = SN + ROM + TOM + MH, PP, AM, SM. The three-factor model = SN + ROM + TOM + MH + PP, AM, SM. The two-factor model = SN + ROM + TOM + MH + PP + AM, SM. One-factor model = all items load on a single factor.
Abbreviations: SN, Supervisor narcissism; ROM, Relationship-oriented mentorship; TOM, Task-oriented mentorship; MH, Mental health; PP, Proactive personality; AM, Abusive mentorship; SM, Servant mentorship.

Table 3 Descriptive Statistics and Correlation Analysis

Variables	M	SD	I	2	3	4	5	6	7	8
I. Gender	–	–	I							
2. Age	26.210	1.812	0.065	I						
3. ET	–	–	−0.190***	0.125**	I					
4. SAT	–	–	−0.048	0.050	−0.003	I				
5. SN	2.867	1.567	0.083	−0.032	0.054	−0.034	I			
6. ROM	6.449	0.944	−0.109*	0.055	0.024	−0.058	−0.356***	I		
7. TOM	5.905	0.986	0.030	−0.008	−0.055	−0.081	−0.104*	0.571***	I	
8. PP	4.906	1.026	0.003	0.075	−0.043	−0.028	−0.058	0.376***	0.307***	I
9. MH	17.304	3.073	0.070	−0.007	−0.079	−0.016	−0.111**	0.357***	0.147***	0.275***

Notes: N=547; *$p < 0.05$, **$p < 0.01$, ***$p < 0.001$.
Abbreviations: ET, Education type; SAT, Supervisor's academic title; SN, Supervisor narcissism; ROM, Relationship-oriented mentorship; TOM, Task-oriented mentorship; PP, Proactive personality; MH, Mental health.

Additionally, the proactive personality of graduate students was positively correlated with their mental health ($r = 0.275$, $p < 0.001$).

Mediating Effect Analysis of Mentorship Styles

To examine the effect of supervisor narcissism on graduate students' mental health and the mediating role of mentorship styles, we used PROCESS Model 4 (Table S1). The results indicated that supervisor narcissism was significantly and negatively related to graduate students' mental health ($\beta = -0.351$, $t = -2.663$, $p = 0.008$), supporting Hypothesis 1. After including the mediating variables, supervisor narcissism was significantly and negatively related to task-oriented mentorship ($\beta = -0.107$, $t = -2.492$, $p = 0.013$) and relationship-oriented mentorship ($\beta = -0.351$, $t = -8.742$, $p < 0.001$), supporting Hypotheses 2a and 2b. Additionally, task-oriented mentorship was significantly and negatively related to graduate students' mental health ($\beta = -0.348$, $t = -2.303$, $p = 0.022$), while relationship-oriented mentorship was significantly and positively related to their mental health ($\beta = 1.380$, $t = 8.547$, $p < 0.001$). These findings supported Hypothesis 3a but not Hypothesis 3b.

The bias-corrected percentile bootstrap analysis revealed that the mediating effect of mentorship styles was significant ($\beta = -0.447$, $SE = 0.090$, 95% CI [−0.642, −0.284], excluding zero), with further details provided in Table 4. However, the direct effect of supervisor narcissism on graduate students' mental health became insignificant ($\beta = 0.096$, $t = 0.730$, 95% CI [−0.163, 0.356], including zero). These findings supported Hypothesis 4, indicating that task-oriented and relationship-oriented mentorship fully mediated the relationship between supervisor narcissism and students' mental health. The strength of the indirect effects was evaluated using pairwise contrasts, revealing that relationship-oriented mentorship was the most influential mediator (indirect contrast: relationship-oriented minus task-oriented = −0.521, $SE = 0.120$, 95% CI [0.311, 0.781], excluding zero.

Table 4 Decomposition of Total Effect, Direct Effect and Mediating Effect

Categories	Effect Value	Boot SE	t	Boot LLCI	Boot ULCI
Total effect	−0.351	0.132	−2.663**	−0.609	−0.092
Direct effect	0.096	0.132	0.730	−0.163	0.356
Indirect effect	−0.447	0.090	–	−0.642	−0.284
TOM	0.037	0.025	–	0.001	0.095
ROM	−0.484	0.103	–	−0.708	−0.299

Note: **$p <0.01$.
Abbreviations: Boot SE, boot standard error; Boot LLCI, boot confidence interval lower limit; Boot ULCI, boot confidence interval upper limit; TOM, Task-oriented mentorship; ROM, Relationship-oriented mentorship.

To further examine the robustness of the mediating effects, we conducted multiple mediation tests (Table S2). After accounting for the mediating effects of abusive and servant mentorship, the indirect effects of task-oriented mentorship ($\beta = 0.047$, $SE = 0.029$, 95% CI [0.005, 0.114], excluding zero) and relationship-oriented mentorship ($\beta = -0.386$, $SE = 0.105$, 95% CI [−0.608, −0.197], excluding zero) remained significant. However, the indirect effects of abusive mentorship ($\beta = -0.056$, $SE = 0.065$, 95% CI [−0.190, 0.067], including zero) and servant mentorship ($\beta = -0.125$, $SE = 0.078$, 95% CI [−0.295, 0.017], including zero) were not significant. Additionally, abusive mentorship ($\beta = -0.123$, $t = -0.839$, $p = 0.402$) and servant mentorship ($\beta = 0.389$, $t = 1.904$, $p = 0.058$) were not significantly related to mental health, leading to their exclusion from further analysis. These findings further supported Hypothesis 4, illustrating that supervisor narcissism influences students' mental health through task-oriented and relationship-oriented mentorship, thereby reinforcing the robustness of the mediation mechanism.

Moderated Mediation Effect Analysis

We utilized Model 14 of PROCESS to examine the moderated mediation effect. As shown in Table 5 and Figure 2, proactive personality significantly moderated the relationship between relationship-oriented mentorship and mental health ($\beta = -0.766$, $t = -4.513$, $p < 0.001$), as well as the relationship between task-oriented mentorship and mental health ($\beta = 0.440$, $t = 2.928$, $p = 0.004$). These findings supported Hypothesis 5a but did not support Hypothesis 5b.

To further elucidate these moderation effects, simple slope analyses were conducted (Figures 3 and 4). For students with low proactive personalities, task-oriented mentorship was significantly and negatively related to their mental health ($\beta = -0.854$, $SE = 0.206$, $p < 0.001$, 95% CI [−1.259, −0.449], excluding zero). However, for students with high proactive personalities, task-oriented mentorship showed no significant relationship with their mental health ($\beta = 0.026$, $SE = 0.215$, $p = 0.90$, 95% CI [−0.396, 0.449], including zero). Additionally, for students with low proactive personalities, relationship-oriented mentorship was significantly and positively related to their mental health ($\beta = 1.560$, $SE = 0.189$, p

Table 5 Moderated Mediating Effect Test

| Variables	TOM (T2)			ROM (T2)			Mental Health (T3)		
	β	SE	t	β	SE	t	β	SE	t
Gender	0.055	0.089	0.620	−0.170	0.084	−2.028*	0.644	0.250	2.572*
Age	−0.004	0.043	−0.084	0.051	0.040	1.263	−0.131	0.120	−1.085
ET	−0.088	0.088	−1.006	0.041	0.082	0.500	−0.425	0.245	−1.735
SAT	−0.117	0.060	−1.953	−0.108	0.056	−1.918	0.004	0.167	0.026
SN (T1)	−0.107	0.043	−2.492*	−0.351	0.040	−8.742***	0.005	0.129	0.041
TOM (T2)							−0.414	0.148	−2.800**
ROM (T2)							0.794	0.191	4.164***
PP (T1)							0.606	0.133	4.568***
TOM × PP							0.440	0.150	2.928**
ROM × PP							−0.766	0.170	−4.513***
R^2	0.021			0.142			0.208		
F	2.338*			17.854***			14.098***		

Notes: *$p < 0.05$, **$p < 0.01$, ***$p < 0.001$.
Abbreviations: ET, Education type; SAT, Supervisor's academic title; SN, Supervisor narcissism; TOM, Task-oriented mentorship; ROM, Relationship-oriented mentorship; PP, Proactive personality.
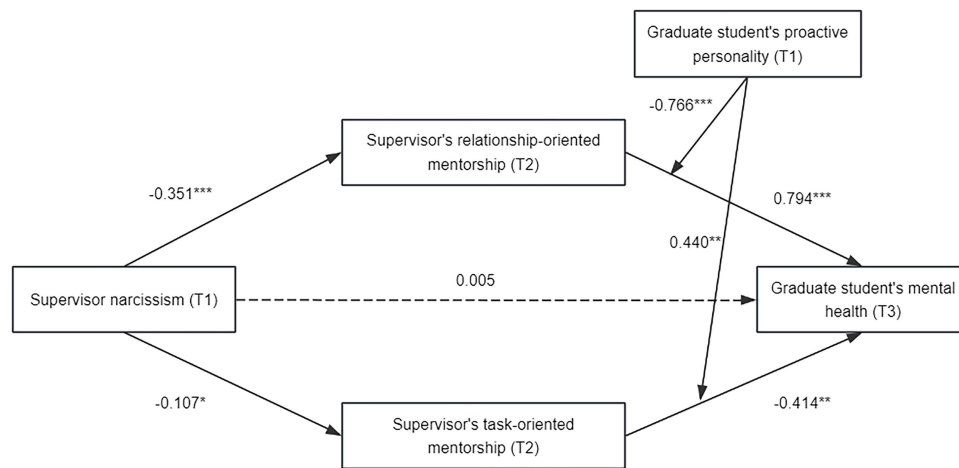
Figure 2 Moderated Mediation Model.
**Notes**: *p < 0.05, **p < 0.01, ***p < 0.001.
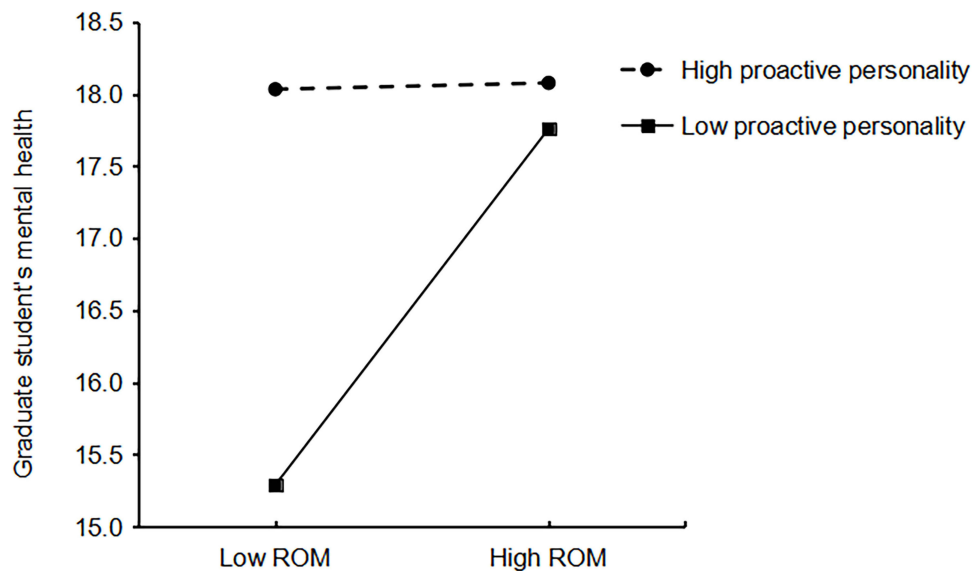
Figure 3 Interaction Effect of ROM and Student's Proactive Personality.
Abbreviation: ROM, Relationship-oriented mentorship.

< 0.001, 95% CI [1.188, 1.932], excluding zero), while this positive relationship weakened for those with high proactive personalities (β = 0.028, SE = 0.307, p = 0.928, 95% CI [−0.576, 0.632], including zero).

As shown in Table 6, proactive personality also moderated the indirect effects of mentorship styles. For graduate students with low proactive personalities, the indirect effect of supervisor narcissism on mental health was significant through both task-oriented mentorship (indirect effect = 0.091, 95% CI [0.014, 0.192], excluding zero) and relationship-oriented mentorship (indirect effect = −0.547, 95% CI [−0.859, −0.335], excluding zero). However, for students with high proactive personalities, these indirect effects were not significant (task-oriented: indirect effect = −0.003, 95% CI [−0.047, 0.056], including zero; relationship-oriented: indirect effect = −0.010, 95% CI [−0.229, 0.463], including zero). Thus, as the level of students' proactive personality increased, the indirect effects diminished, supporting Hypothesis 6a and 6b.
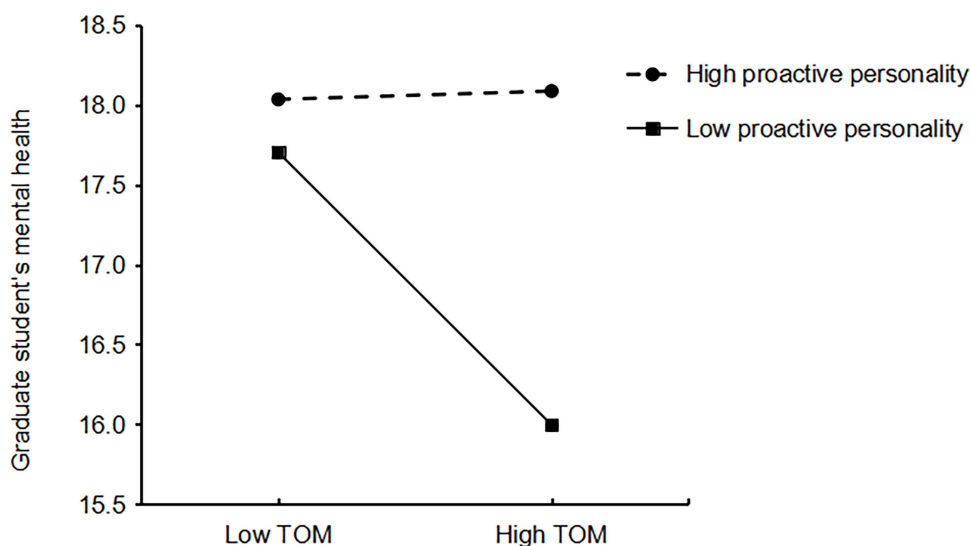
Figure 4 Interaction Effect of TOM and Student's Proactive Personality.
Abbreviation: TOM, Task-oriented mentorship.

Discussion

In recent years, various surveys and media reports have increasingly highlighted the psychological crises of graduate students. It is essential to recognize the antecedents of graduate student mental health and identify effective mitigation strategies.[3,4] This study employs the Job Demands-Resources (JDR) theory to examine how and when supervisor narcissism negatively affects the mental health of graduate students through their mentorship styles. Our results supported all proposed hypotheses except for Hypothesis 3b and 5b. Specifically, highly narcissistic supervisors tend to exhibit less task-oriented and relationship-oriented mentorship, thus affecting graduate students' mental health. Moreover, this mediating effect is particularly pronounced among students with low levels of proactive personality. Overall, our findings provide valuable insights into the relationships between supervisor narcissism, mentorship styles, and graduate students' mental health, offering both theoretical contributions and practical recommendations for improving student mental health.

Theoretical Implications

This study contributes to the existing literature by elucidating the impact of supervisor narcissism on graduate students. While prior research in higher education has focused mainly on the intrapersonal effects of narcissism,[60,61] the significant role of supervisor narcissism in student-supervisor interactions remains underexplored. By addressing this gap, we highlight the pronounced power imbalance and the critical influence of supervisors within higher education.[20] Our findings demonstrated that supervisor narcissism negatively affects graduate students' mental health, aligning with existing literature on the adverse outcomes of leader narcissism.[31,32,62,63] These results underscore the generalizability

Table 6 The Moderating Effect of Graduate Student's Proactive Personality on Mediating Effects

	Proactive Personality	Indirect Effects	Boot SE	Boot LLCI	Boot ULCI
TOM	Low (-SD)	0.091	0.046	0.014	0.192
	High (+SD)	−0.003	0.024	−0.047	0.056
ROM	Low (-SD)	−0.547	0.133	−0.859	−0.335
	High (+SD)	−0.010	0.180	−0.229	0.463

Abbreviations: Boot SE, boot standard error; Boot LLCI, boot confidence interval lower limit; Boot ULCI, boot confidence interval upper limit; TOM, Task-oriented mentorship; ROM, Relationship-oriented mentorship.

of these adverse effects across various contexts, enhancing our understanding of narcissistic personality traits. Additionally, our study supports and extends the Job Demands-Resources (JDR) theory by applying it to the supervisor-student relationship. We propose that supervisor narcissism acts as a "job demand" that detrimentally impacts students' mental health.[22] In summary, these findings offer valuable insights into the role of supervisors in graduate student development, expand the nomological network of narcissism, and provide new perspectives on supervisor-student dynamics in higher education.

Second, this study enriches the literature on graduate student mental health by exploring the impact of supervisor narcissism. While prior research has mainly concentrated on the effects of specific supervisor behaviors[8,9] and supervisor-student relationships[2,11] on graduate students' mental health, it has largely overlooked the role of supervisors' personality traits. Our study addresses this gap by examining how supervisor narcissism influences students' mental health from a personality perspective. This contribution significantly advances our understanding of the antecedents of student mental health, providing a more nuanced insight into the complexities of supervisor-graduate student interactions.

Third, leveraging the Job Demands-Resources (JDR) model, this study elucidates the mediating roles of task-oriented and relationship-oriented mentorship. This finding extends the application of the JD-R theory, providing insightful theoretical explanations and empirical evidence to uncover the "black box" between supervisor narcissism and graduate student mental health. Specifically, our results revealed that relationship-oriented mentorship positively related to students' mental health, supporting existing research on leadership in workplace settings.[40] These findings suggest that such mentorship style can foster mental health in educational and professional contexts. However, a negative correlation between task-oriented mentorship and students' mental health was found, contradicting Hypothesis 3b and previous findings in workplace settings.[40] This finding highlights the unique nature of the supervisor-graduate student relationship. Task-oriented leadership can enhance performance[64] and teamwork, thereby enhancing subordinates' positive states.[42,65] However, in higher education, the focus is often on academic achievement and personal growth.[66] Task-oriented supervisors may primarily view students as task executors,[67] neglecting their social and psychological needs, thus negatively impacting their mental health.[68] These findings suggest that insights from workplace research may not directly apply to educational settings, underscoring the need for further investigation into supervisor-student dynamics to better understand how supervisory behaviors impact graduate students.

Finally, this study explored the moderating role of graduate students' proactive personality within the framework of the JD-R theory, revealing a crucial boundary condition between supervisor narcissism and students' mental health. Our findings indicated that the positive impact of relationship-oriented mentorship serves as "timely assistance" for students with low proactive personalities, while it is merely "icing on the cake" for those with high proactive personalities. Additionally, the moderating effect of task-oriented mentorship further highlights the importance of supervisor-student trait matching, supporting previous research.[69] For students with low proactive personalities, an increase in task-oriented mentorship significantly worsened their mental health. However, as proactive personality levels increased, the negative impact of such a mentorship style diminished and ultimately became a slightly positive effect. Highly proactive students excel at identifying opportunities[70] and taking initiative to achieve their goals.[23] Their traits align well with task-oriented mentorship. Thus, although such supervisors may have potential negative impacts, their guidance can help highly proactive students meet goals[43,64] and satisfy their intrinsic needs, ultimately leading to slight improvements in mental health. These results extend the application of the JD-R theory and underscore the critical role of proactive personality, offering new theoretical insights for higher education research.

Practical Implications

This study provides practical implications for supervisors, students, and higher education institutions.

Supervisors should recognize that negative personality traits, such as narcissism, can adversely impact graduate students' mental health. Our research showed that narcissistic supervisors tend to engage in less supportive supervisory behaviors, which can harm students' mental health. Therefore, supervisors should prioritize not only academic guidance but also their students' emotional and developmental needs while avoiding undue pressure.[71] Additionally, since students' proactive personalities moderate the effects of mentorship styles, supervisors should adapt their styles based on students' traits. For students with low proactive personalities, it is crucial to avoid excessive emphasis on task performance and instead provide extra support and encouragement. This approach can enhance students' proactivity and overall mental health.

Graduate students should recognize the importance of developing a proactive personality. Our study found that the proactive personality can serve as a valuable job resource, mitigating the negative effects of detrimental supervision.[22] Therefore, engaging in relevant training or workshops to enhance these proactive traits is highly recommended. Additionally, students should actively seek social support when facing challenges and maintain open, positive communication with their supervisors. This approach can encourage supervisors to adjust their methods promptly, ultimately fostering a healthier and more productive supervisor-student relationship.

Higher education institutions should implement several measures based on our findings. First, our study found that supervisors' negative personality traits and mentorship can adversely affect graduate students. Therefore, institutions should refine their supervisor recruitment processes, establishing stringent selection criteria to avoid hiring individuals whose traits may be detrimental to students. Second, formal guidelines should be developed to clearly outline the rights and responsibilities of both supervisors and students, including explicit protocols for terminating supervisory relationships. Moreover, a comprehensive assessment system should be established to gather regular feedback from students about their mental health and supervisors' behaviors. This approach will enable early identification and resolution of issues, thereby preventing the escalation of extreme incidents. Third, institutions should enhance training programs to help supervisors recognize narcissistic behaviors and adopt more empathetic supervision techniques, such as providing constructive feedback.[10] Lastly, our study indicated that narcissistic traits can yield positive outcomes in specific contexts. Institutions should balance strict policies with a supportive culture, fostering a collaborative and cohesive organizational climate to effectively harness the beneficial aspects of supervisor narcissism in support of student development.

Limitations and Future Directions

The current study presents several limitations that highlight areas for further investigation. First, our data were exclusively based on graduate students' self-reports, which may introduce bias due to social desirability and other factors. Future research should collect data from multiple sources, including supervisors and students, to enhance objectivity.

Second, our survey data does not allow us to establish causality. While we tried to tackle this issue by measuring the predictor, mediator, and dependent variables over three separate waves, future studies should consider employing experimental methods to strengthen the validity of our findings.

Finally, our research suggests that supervisor narcissism may also have positive aspects for graduate student development. Previous studies have found similar outcomes, such as narcissistic leadership inspiring their followers.[72] Future research should focus on the potential positive effects of supervisor narcissism to better understand its relationship with graduate student development.

Conclusion

Based on the JD-R theory, this study explored how and when supervisor narcissism impacts graduate students' mental health within a higher education context. The results revealed that: (1) supervisor narcissism was negatively related to students' mental health through task-oriented and relationship-oriented mentorship styles; (2) graduate students' proactive personality moderated the impact of these mentorship styles on their mental health; (3) graduate students' proactive personalities moderated the indirect effect of supervisor narcissism on their mental health through these mentorship styles. These findings enhance our comprehension of the relationship between supervisor narcissism, mentorship styles, and graduate students' mental health. They also provide valuable theoretical perspectives and practical recommendations for mitigating the negative impacts of supervisor narcissism, demonstrating the importance of aligning mentorship styles with student characteristics.

Data Sharing Statement

The data are available by contacting the corresponding author for reasonable request.

Ethics Statement

This study complies with the ethical standards of the Declaration of Helsinki. Ethical approval was obtained from the Department of Applied Psychology, School of Humanities and Social Sciences, Fuzhou University (project ID: 20230125/01). Informed consent was obtained from all individual participants in the study.

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