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The Study on the Construction Path of Academic Norms and Harmonious Supervisor-Supervised Relationship

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Abstract: In the graduate education system, academic norms serve as the cornerstone for safeguarding the quality of academic research and the health of the academic ecosystem, while a harmonious supervisor-supervised relationship is a key element in promoting the all-round development of graduate students and enhancing the effectiveness of graduate education. These two elements are interrelated and mutually influential, jointly constituting an important part of graduate education. Taking the internal correlation between academic norms and harmonious supervisor-supervised relationship as the starting point, this study analyzes the problems existing in the implementation of current academic norms and the construction of supervisor-supervised relationship, introduces the Structural Equation Model (SEM) to explore the influencing factors, and proposes construction paths from the dimensions of social needs, respect needs, and self-actualization needs. It aims to provide theoretical and practical references for the high-quality development of graduate education.

Keywords: Academic Norms; Supervisor-Supervised Relationship; Structural Equation Model (SEM); Construction Path.

1. Introduction

In the graduate education system, academic norms serve as the cornerstone for safeguarding the quality of academic research and the health of the academic ecosystem, while a harmonious supervisor-student relationship stands as a key element in promoting the all-round development of graduate students and enhancing the effectiveness of graduate education. These two aspects are interrelated and mutually influential, collectively constituting an important part of graduate education. Academic norms define rigorous boundaries for scientific research innovation and represent the fundamental guideline for graduate students to cultivate academic integrity and refine research capabilities. The soundness of these norms directly impacts the credibility of academic achievements and the sustainable development of academic undertakings. In contrast, as the core interpersonal bond in the graduate training process, the supervisor-student relationship bears multiple missions, including knowledge inheritance, capability development, and value guidance. The words and deeds of supervisors, along with positive interactions between supervisors and students, provide crucial support for stimulating graduate students' academic potential and facilitating their growth into qualified researchers.

Against the backdrop of improving quality and efficiency in graduate education in the new era, in-depth exploration of the construction paths of academic norms and the optimization strategies of the supervisor-student relationship, as well as clarifying the inherent collaborative logic between the two, is not only a practical necessity to address existing issues in current graduate training—such as academic misconduct and inadequate teacher-student communication—but also holds significant theoretical value and practical significance for improving the graduate education system, fostering high-quality innovative talents, and consolidating the foundation of the academic ecosystem. Based on this, this paper is grounded in the practical context of graduate education and focuses on the collaborative development of academic norms and the supervisor-student relationship, aiming to provide useful references for advancing the high-quality development of graduate education.

2. Research on the Correlation between Academic Norms and Supervisor-Supervised Relationship

2.1. Academic Norms as an Important Criterion for Supervisor-Supervised Relationship

Academic norms refer to the behavioral guidelines that must be followed in academic research activities, covering multiple links such as academic ethics, research methods, and achievement publication. In the supervisor-supervised relationship, supervisors, as guides and instructors in academic research, are responsible for imparting academic norms to graduate students and cultivating their academic ethics and rigorous research attitude. Only when graduate students conduct research within the framework of academic norms can the authenticity, reliability, and innovation of research results be ensured. Therefore, when guiding graduate students to write papers, supervisors need to teach them to correctly cite literature and avoid academic misconduct such as plagiarism and fabrication. This is not only a respect for academic traditions but also an important measure to maintain the credibility of the academic community. At the same time, abiding by academic norms helps establish a trusting relationship between supervisors and graduate students, laying a foundation for the healthy development of the supervisor-supervised relationship. If graduate students violate norms in academic research, it will not only damage their own academic reputation but also affect the supervisor's academic image and the harmony and stability of the supervisor-supervised relationship.

2.2. Supervisor-Supervised Relationship as an Important Carrier for Academic Norm Education

The supervisor-supervised relationship is an interactive relationship established between graduate students and

supervisors. This relationship involves not only the transmission of knowledge but also the inheritance of academic literacy and academic values. Through daily communication, academic discussions, and scientific research practice with graduate students, supervisors subtly integrate academic norms into the training process of graduate students [1]. The rigorous attitude displayed by supervisors in scientific research projects and their adherence to academic standards will exert a subtle exemplary influence on graduate students. In turn, graduate students learn how to follow academic norms, conduct scientific research design and data analysis, and write research reports and papers that meet academic requirements through participating in scientific research projects. Moreover, a good supervisor-supervised relationship can provide graduate students with an open and inclusive academic exchange environment, encouraging them to actively put forward their own views and ideas, and deepen their understanding and recognition of academic norms through discussions and debates.

2.3. Jointly Promoting the All-Round Development of Graduate Students

Both the adherence to academic norms and the construction of a harmonious supervisor-supervised relationship aim to realize the all-round development of graduate students. Academic norms can cultivate graduate students' academic integrity and innovation ability, equip them with a solid academic foundation and rigorous research style, and lay a solid foundation for their future academic careers and professional development. A harmonious supervisor-supervised relationship, on the other hand, can pay attention to the psychological needs and personality development of graduate students, provide them with sufficient support and encouragement, and help them establish correct academic values and career goals. Supervisors not only provide academic guidance for graduate students but also assist them in solving life problems and cultivate their teamwork and communication skills through cooperative training teams. In such an integrated and harmonious environment, graduate students can not only make progress academically but also improve in interpersonal communication, teamwork, and social responsibility [2].

3. Analysis of Current Problems in Academic Norms and Supervisor-Supervised Relationship

3.1. Problems in Academic Norms

As one of the criteria for graduate students' scientific research and academic activities, academic norms have been frequently involved in problematic incidents amid the vigorous development of academic research. From paper plagiarism to data fabrication, these incidents expose numerous issues in the implementation and cognitive aspects of academic norms that urgently need to be addressed [3]. Specifically, there are the following types:

Firstly, academic misconduct occurs from time to time. Due to insufficient understanding of academic norms, heavy scientific research pressure, or the influence of utilitarian ideas, some graduate students engage in academic misconduct such as plagiarism, fabrication, and data falsification. These behaviors not only undermine the fairness and seriousness of the academic ecosystem but also damage the reputation of graduate education.

Secondly, academic research methods are not rigorous. Some graduate students lack systematic training in research methods during the scientific research process, resulting in unreasonable research design and unscientific data analysis, which makes the research results lack reliability and persuasiveness. For example, when conducting questionnaires, they do not pay attention to the representativeness of samples and the reliability and validity of questionnaires, and randomly distribute and collect questionnaires, making the survey results unable to truly reflect the research issues.

Thirdly, the publication of academic achievements is irregular. In the process of publishing academic achievements, there are problems such as duplicate submission and improper authorship. Some graduate students submit the same paper to multiple journals to increase the chances of publication; others do not sort the authorship according to the actual contribution when publishing papers, leading to authorship disputes.

3.2. Problems in Supervisor-Supervised Relationship

As the core link in the graduate training system, the supervisor-supervised relationship directly affects the quality of academic inheritance and talent development. However, with the expansion of graduate education scale and the deepening of interdisciplinary integration, the supervisor-supervised relationship has exposed many contradictions that urgently need to be resolved. It mainly focuses on the following aspects:

Firstly, the lack of supervisor guidance. Due to heavy scientific research tasks and administrative affairs, some supervisors have insufficient time and energy to guide graduate students, meeting with the graduate students they supervise less than once a week. They cannot timely understand the learning and research progress of graduate students and provide sufficient guidance and feedback, leading to an estranged supervisor-supervised relationship.

Secondly, poor communication between supervisors and students. There are communication barriers between supervisors and graduate students. The former hopes that graduate students can conduct in-depth research in their own research directions, while graduate students may have their own ideas. Therefore, there are differences between the two parties in academic views, research directions, and career planning, and the lack of effective communication and exchange is likely to lead to conflicts and disputes.

Thirdly, the imbalance of power structure. In the supervisor-supervised relationship, supervisors are often in a dominant position, while graduate students are in a passive acceptance state. This imbalance of power structure is likely to suppress the autonomy and creativity of graduate students.

3.3. Mutual Influence of Problems in Academic Norms and Supervisor-Supervised Relationship

Problems in academic norms will affect the harmony and stability of the supervisor-supervised relationship. Graduate students' academic misconduct will make supervisors have negative emotions such as distrust or disappointment towards them, thereby affecting the supervisors' enthusiasm and attitude in guiding graduate students. At the same time, problems in the supervisor-supervised relationship will also

make it difficult to implement academic norms. In the process of guidance, if there is insufficient supervisor guidance and poor communication between supervisors and students, graduate students cannot timely understand the requirements of academic norms, and are likely to violate the norms in the scientific research process.

3.3.1. Academic Norms and Harmonious Supervisor-Student Relationships

Academic norms provide institutional safeguards for supervisor-student relationships through systematic institutional design. They establish clear behavioral expectations for both parties, offer a standardized framework for resolving potential disputes, and formulate criteria for quality evaluation. These institutional safeguards play a crucial role in maintaining the stability and healthy development of supervisor-student relationships.

In terms of dispute resolution, academic norms have established mechanisms for investigating academic misconduct, mediation processes for authorship disputes, and appeal channels for graduate students. These systems provide standardized procedures for addressing academic integrity conflicts, disputes over research achievement ownership, and frictions in guidance methods that may arise in supervisor-student interactions. Compared with emotional confrontations or communication deadlocks caused by the absence of clear rules, rational negotiation and professional evaluation within an institutional framework can efficiently resolve conflicts, prevent the escalation of disputes into long-term antagonism, and thus protect the legitimate rights and interests of both supervisors and students while safeguarding the foundation for positive interaction.

In terms of quality evaluation, the acceptance criteria for research outcomes, indicators for academic competence development, and review rules for academic dissertations defined by academic norms offer a unified goal orientation for both supervisors and students. Supervisors can develop personalized training plans based on these norms to accurately guide the pace of graduate students' academic growth. Meanwhile, graduate students can use these norms as a benchmark to clarify their learning and research priorities, reducing blind exploration. This mutual commitment based on shared standards not only improves the quality of graduate education but also strengthens trust and collaboration between supervisors and students through consensus on goals, fostering both emotional and academic alignment in the gradual development of supervisor-student relationships.

Based on the above analysis, the following hypothesis is proposed:

H1: Academic norms have a direct positive correlation with harmonious supervisor-student relationships.

3.3.2. The Mediating Role of Academic Guidance

The positive impact of academic norms on supervisor-student relationships is not directly transmitted but rather operates through academic guidance as the core mediating carrier. As the most frequent and critical domain of interaction between supervisors and students, academic guidance serves both as a practical platform for the implementation of academic norms and a key link in building harmonious supervisor-student relationships.

Academic guidance transforms the institutional value of academic norms into specific guiding behaviors, and indirectly promotes the harmonious development of supervisor-student relationships through enhancing guidance quality, building trust, and resolving conflicts. Without the mediating role of academic guidance, the institutional safeguards of academic norms would become a "castle in the air," failing to exert a substantive impact on supervisor-student relationships. Conversely, academic guidance divorced from academic norms would descend into randomness and fragmentation due to the lack of unified standards, making it impossible to form a stable interaction model. Academic guidance represents both the "final mile" for the implementation of academic norms and the "core engine" for optimizing supervisor-student relationships. Its quality directly determines the transmission efficiency and effectiveness of the positive impact of academic norms on supervisor-student relationships, serving as an indispensable mediating link between the two.

Based on the above analysis, the following hypothesis is proposed:

H2: Academic guidance plays a mediating role between academic norms and harmonious supervisor-student relationships.

3.3.3. The Mediating Role of Communication Interaction

The positive empowerment of academic norms on harmonious supervisor-student relationships is not directly achieved through institutional texts but through communication interaction as the core transmission carrier, forming a mediating chain of "norms guiding interaction → interaction consolidating relationships." As the primary venue for information exchange, emotional connection, and value consensus between supervisors and students, communication interaction acts as both a dynamic practical platform for the implementation of academic norms and a key link in transforming supervisor-student relationships from "institutional constraint" to "emotional alignment."

Communication interaction transmits the institutional value of academic norms into specific interactive behaviors, and promotes the harmonious development of supervisor-student relationships through the implementation of norms, emotional cohesion, and conflict resolution in interactions. Without the mediating role of communication interaction, the institutional safeguards of academic norms would become a "castle in the air," failing to exert a substantive impact on supervisor-student relationships. Conversely, communication interaction divorced from academic norms would fall into randomness and emotionality due to the lack of unified standards, making it impossible to form a stable supervisor-student interaction model. Communication interaction serves as both a "practical carrier" for the implementation of academic norms and a "core engine" for optimizing supervisor-student relationships. Its quality directly determines the transmission efficiency and effectiveness of the positive impact of academic norms on supervisor-student relationships, constituting an indispensable mediating link between the two.

Based on the above analysis, the following hypothesis is proposed:

H3: Communication interaction plays a mediating role between academic norms and harmonious supervisor-student relationships.

3.3.4. The Chain Mediating Role of Academic Guidance and Communication Interaction

As interconnected and progressive core links in supervisor-student interactions, academic guidance and communication interaction jointly form a "transmission chain" for the implementation of norms and the optimization of relationships. Academic guidance provides a concrete

platform for the implementation of norms, while communication interaction transforms the normative consensus formed through guidance into emotional bonds and collaborative trust, creating a chain transmission logic of "first implementation, then deepening." Without academic guidance, communication interaction would lack normative consensus and fall into randomness and emotionality, failing to provide stable support for relationships. Without communication interaction, the normative requirements transmitted through academic guidance would remain at the "behavioral level," making it difficult to transform into emotional identification and collaborative trust. This chain mediating model not only reveals the internal logic of how academic norms influence supervisor-student relationships but also provides key insights for optimizing such relationships and improving the mechanism for implementing academic norms. Only by simultaneously strengthening the standardization of academic guidance and the effectiveness of communication interaction can the chain transmission be smoother and more efficient, ultimately achieving the multiple goals of improved academic norms, harmonious supervisor-student relationships, and enhanced quality of graduate education.

Based on the above analysis, the following hypothesis is proposed:

H4: Academic guidance and communication interaction jointly play a chain mediating role between academic norms and harmonious supervisor-student relationships.

4. Analysis of Influencing Factors of Academic Norms and Harmonious Supervisor-Supervised Relationship Based on SEM

At present, the post-00s generation has become the main group of graduate students in colleges and universities. They have a higher demand for ideological independence, possess innovative thinking and are willing to accept new things, but their ability to resist setbacks is limited and they are easily influenced by online trends. However, in the communication between supervisors and graduate students, the main focus is still on scientific research and academic communication, with little involvement in social morality, sense of times responsibility, and professional ethics [4]. Therefore, this survey will explore the problems existing in the graduate training process from the aspects of the basic personal information of supervisors and students, ideological guidance, psychological attention, academic guidance, and supervisor-supervised relationship, and use the Structural Equation Model (SEM) to find the main influencing factors.

4.1. Reliability and Validity Test of the Questionnaire

Firstly, the reliability evaluation of the questionnaire. After testing, the overall reliability of the questionnaire is 0.96. Among them, the Cronbach's alpha coefficients of the academic norm scale, harmonious supervisor-supervised relationship scale, academic guidance scale, and communication and interaction scale are 0.89, 0.95, 0.90, and 0.93 respectively, all greater than 0.7, indicating that the questionnaire has high reliability. Secondly, the validity evaluation of the questionnaire includes content validity and construct validity. After testing, the χ^2 value of Bartlett's spherical test is 23902 ($p < 0.001$), and the KMO statistic is 0.96, which proves that the content validity of the questionnaire meets the requirements and further factor analysis can be carried out. To sum up, the dimension formulation and item setting of the research questionnaire are in line with the requirements of validity evaluation.

4.2. Model Construction and Variable Setting

This study uses AMOS software and path analysis method to establish SEM, sets the causal paths between latent variables, and considers the measurement errors between observed variables and their related latent variables.

Table 1. Statistical Information

Statistical Information	Category	Value	Proportion
Gender|	Male	222	38.3%
	Female	357	61.7%
Education Background	Doctor	117	20.2%
	Master	462	79.8%
Discipline	Natural Science	288	49.74%
	Social Science	81	13.99%
	Humanities&Social Sciences	210	36.27%
Teaching Experience	Within 10 years	287	49.57%
	11-20 years	180	31.09%
	More than 20 years	112	19.34%
Professional Title	Lecturer and below	394	68.05%
	Associate Professor	150	25.9%
	Professor	35	6.04%

4.3. Structural Equation Model Test

4.3.1. Structural Model Fit Test

In terms of model fit evaluation, the higher the model fit, the higher the model usability, and the more connotative significance the parameter estimation has. Referring to the structural equation model evaluation standards, this study evaluates the model fit from three aspects: absolute fit, incremental fit, and parsimonious fit. As shown in Table 2, the test results show that all fit indices meet the critical value requirements, indicating that the model has a good fit and is suitable for further hypothesis testing.

4.3.2. Hypothesis Path Test

After verification by the structural equation model, the research hypothesis H1 does not reach statistical significance, while H2, H3, and H4 are all statistically significant. The path coefficients are 0.600, 0.202, and 0.650 respectively, all greater than zero, and all pass the 1% significance level test ($p < 0.001$), as shown in Table 3. The above research results indicate that hypothesis H1 is not valid, that is, academic

norm behaviors cannot directly affect the harmonious supervisor-supervised relationship; academic norm education has a positive effect on academic guidance, and hypothesis H2 is confirmed; academic norm education has a positive impact on communication and interaction, and hypothesis H3 is verified.

Table 2. Model Fit Indices

Fit Standards	Absolute Fit Indices			Incremental Fit Indices			Parsimonious Fit Indices		
	GFI	ACFI	RMESA	NFI	RFI	CFI	PNFI	PCFI	$\chi 2/df$
Critical Value	>0.9	>0.9	<0.08	>0.9	>0.9	>0.9	>0.5	>0.5	1<NC<3
Actual Value	0.94	0.92	0.057	0.97	0.96	0.98	0.77	0.78	2.95

Table 3. Research Hypothesis Test Results

Research Hypothesis	Path	Estimate	S.E.	C.R.	P	Test Result
H1	Academic Norms >>Harmonious Supervisor-Supervised Relationship	-0.002	0.6	-0.7	0.94	FLASE
H2	Academic Norms >> Academic Guidance	0.598	0.05	13.5	***	TURE
	Academic Guidance >> Harmonious Supervisor-Supervised Relationship	0.39	0.07	7.95	***	TURE
H3	Academic Norms >> Communication and Interaction	0.204	0.05	5.05	***	TURE
	Communication and Interaction >> Harmonious Supervisor-Supervised Relationship	0.42	0.07	8.50	***	TURE
H4	Academic Guidance >> Communication and Interaction	0.662	0.05	15.15	***	TURE

4.3.3. Mediation Effect Test

This study also uses AMOS's Bootstrap method to test the mediating role of academic guidance and communication and interaction. Setting the confidence interval at 95%, the results show that the upper and lower limits are between 0.62 and 0.37, excluding 0, indicating that the indirect effect is significant; at the same time, checking the direct effect, it is found that the upper and lower limits are between 0.12 and -0.099, including 0, indicating that the direct effect is not significant; that is, academic guidance and communication and interaction play a significant full mediating role between academic norm education and harmonious supervisor-supervised relationship, and hypothesis H4 is supported.

Table 4. Direct Effect and Mediation Effect Analysis

	STD Estimate	Estimate	P	95%Confidence Interval B.C.
Total Effect	/	0.48	***	0.35,0.57
Direct Effect	0.48	-0.003	0.94	-0.11,0.11
Total Indirect Effect	0.49	0.48	***	0.36,0.62
Academic Norm Education > Academic Guidance > Harmonious Supervisor-Supervised Relationship	0.24	0.23	**	0.17, 0.36
Proportion of Indirect Effect of Academic Guidance	48.97% (0.24/0.49)			
Academic Norm Education > Communication and Interaction > Harmonious Supervisor-Supervised Relationship	0.17	0.16	***	0.07,0.27
Proportion of Chain Mediation Effect	34.69% (0.17/0.49)			

The research results show that the mechanism of action of supervisors' academic guidance and communication and interaction between supervisors and students is similar. In the mechanism with academic guidance as the mediating variable, as supervisors strengthen academic norm education, they will increase daily guidance to graduate students, and the increase in academic guidance will help build a more scientific and reasonable supervisor-supervised relationship; in the mechanism with communication and interaction as the mediating variable, with the strengthening of academic norm education, communication and interaction will be correspondingly enhanced, and the supervisor-supervised relationship will further show a harmonious trend.

4.3.4. Empirical Result Analysis

The model designs the following latent variables: academic norm awareness, supervisor guidance behavior, teacher-student communication effect, and supervisor-supervised relationship quality.

Observed variables related to academic norm awareness include X1 and X2: X1 represents graduate students' understanding of academic norms, and X2 represents graduate students' consciousness in abiding by academic norms.

Observed variables related to supervisor guidance behavior include X3 and X4: X3 represents supervisors' attention to academic norms, and X4 represents the frequency and quality of supervisors' guidance on graduate students' academic research.

Observed variables related to teacher-student communication effect include X5 and X6: X5 represents the frequency of communication between supervisors and graduate students, and X6 represents the effectiveness and openness of communication between supervisors and graduate students.

Observed variables related to supervisor-supervised relationship quality include X7 and X8: X7 represents graduate students' satisfaction with supervisors, and X8 represents supervisors' satisfaction with graduate students.

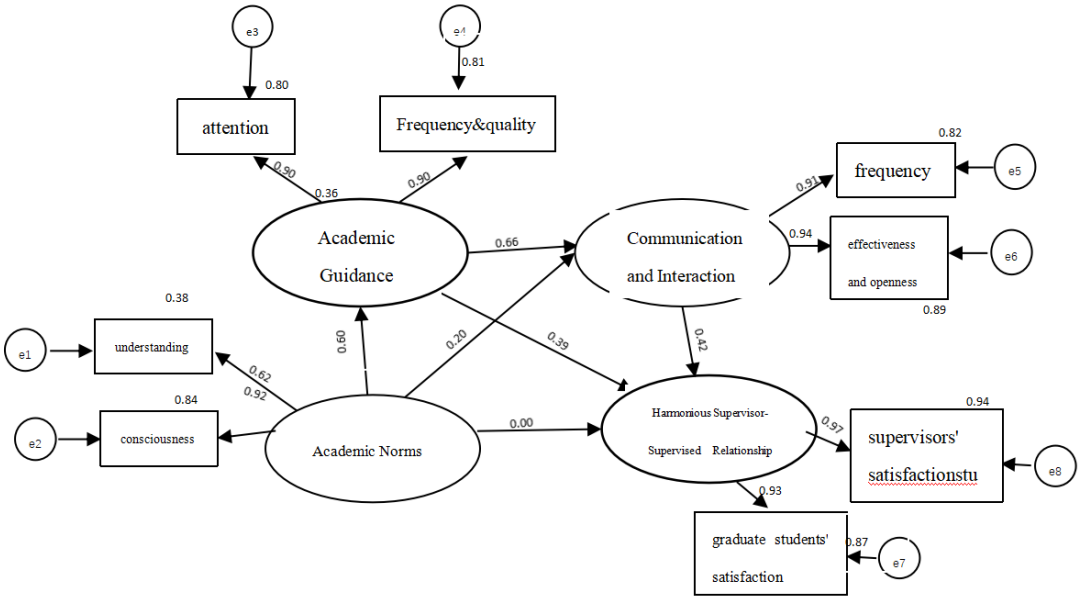


Figure 1. Structural Equation Model of Academic Norms, Academic Guidance, Communication, and Harmonious Supervisor-Supervised Relationship

From the weight coefficients (values on each arc), it can be seen that factors such as supervisors' attention to academic norms, the frequency and quality of supervisors' guidance on graduate students' academic research, and the frequency and effectiveness of teacher-student communication have a positive effect on moral education and the construction of supervisor-supervised relationship. On the contrary, they will affect the implementation of academic norms and the harmonious development of the supervisor-supervised relationship.

Firstly, supervisors' attention to academic norms. Supervisors' attention to academic norms directly affects graduate students' cognition and compliance with academic norms. If supervisors strictly abide by academic norms in the scientific research process and emphasize the importance of academic norms, graduate students will be subtly influenced, and their understanding and consciousness of abiding by academic norms will be improved.

Secondly, the frequency and quality of supervisors' guidance on graduate students' academic research. The frequency and quality of supervisors' guidance are key factors affecting the level of graduate students' academic research and their compliance with academic norms. Regular communication and guidance between supervisors and graduate students can timely find problems existing in graduate students' academic research, provide targeted suggestions and help, and guide them to conduct research in accordance with academic norms.

Finally, the frequency and effectiveness of teacher-student communication. Good teacher-student communication can promote information exchange and emotional communication between supervisors and graduate students, and enhance mutual trust and understanding. Through frequent communication, supervisors can better understand the academic needs and psychological state of graduate students, and graduate students can also timely consult academic questions and seek guidance from supervisors, thereby improving the efficiency and quality of academic research, and promoting the implementation of academic norms and the harmonious development of the supervisor-supervised relationship.

5. Construction Path of Academic Norms and Harmonious Supervisor-Supervised Relationship

5.1. Strengthening Academic Norm Education and Supervisor Responsibility Implementation Based on Social Needs

Firstly, establish and improve the academic norm education system. Colleges and universities should incorporate academic norm education into the whole process of graduate training, offer special academic norm courses, and systematically impart knowledge on academic ethics, research methods, and achievement publication. At the same time, through holding academic lectures, seminars, and other forms, invite experts and scholars to share the importance and practical experience of academic norms, so as to improve graduate students' understanding and comprehension of academic norms. In addition, an assessment mechanism for academic norm education can be established, and the learning and compliance of academic norms can be included in the comprehensive quality evaluation system of graduate students to ensure the effectiveness of academic norm education.

Secondly, clarify the responsibilities of supervisors in academic norm education. Supervisors are the primary responsible persons for academic norm education and should effectively perform their duties of academic norm education and guidance for graduate students. In the process of guiding graduate students, supervisors should set an example by strictly abiding by academic norms and establishing a good model for graduate students. At the same time, strengthen the process management of graduate students' academic research, and provide careful guidance and supervision in all links from topic selection, research design, data collection and analysis to paper writing and publication to ensure that graduate students' research work meets the requirements of academic norms. Supervisors should pay attention to the construction

of graduate students' academic ethics, timely discover and correct problems in graduate students' academic research, and prevent the occurrence of academic misconduct.

Finally, strengthen cooperation and exchange between colleges and universities and society. Colleges and universities should actively cooperate with all sectors of society to jointly promote the construction and development of academic norms. Cooperate with scientific research institutions, enterprises, and other organizations to carry out scientific research projects, allowing graduate students to experience the importance of academic norms in practical scientific research work and improve their ability to apply academic norms to solve practical problems. At the same time, strengthen cooperation with academic journals, publishing houses, etc., understand the norms and requirements of academic publishing, and provide guidance and help for the publication of graduate students' academic achievements. Invite people from all walks of life to participate in the academic evaluation and assessment of graduate students, and introduce a social supervision mechanism to ensure that graduate students' academic achievements meet social needs and academic norm requirements.

5.2. Building an Equal and Interactive Supervisor-Supervised Relationship Based on Respect Needs

Firstly, respect the subject status and individual differences of graduate students. Supervisors should fully recognize that graduate students are individuals with independent thinking ability and personality characteristics, respect their academic interests and research directions, and give them sufficient independent space and innovation opportunities. When formulating research plans and selecting topics, fully listen to the opinions and suggestions of graduate students, encourage them to actively participate in discussions and decision-making, and give play to their subjective initiative and creativity [5]. At the same time, pay attention to the individual differences of graduate students, and formulate personalized training programs and guidance methods according to their different characteristics and needs to meet their learning and development needs.

Secondly, establish an effective teacher-student communication mechanism. A regular and effective communication mechanism should be established between supervisors and graduate students to strengthen information exchange and emotional communication between them. Supervisors can timely understand the learning and research progress, psychological state, and needs of graduate students through regularly holding research group meetings and having individual talks with graduate students, and provide them with necessary guidance and support. Graduate students should also take the initiative to communicate with supervisors, timely feedback the problems and difficulties encountered in learning and research, and seek help and suggestions from supervisors. Make full use of modern information technology to broaden the channels of communication between supervisors and students and improve the efficiency and quality of communication.

Finally, create an equal and democratic academic atmosphere. In the supervisor-supervised relationship, supervisors should break the traditional power structure model and create an equal and democratic academic atmosphere. Encourage graduate students to actively express their views and ideas, carry out academic discussions and debates, and stimulate innovative inspiration through the collision of ideas. Supervisors should accept different opinions and suggestions from graduate students with an open mind, avoid acting as authorities, and suppressing the autonomy and creativity of graduate students. At the same time, guide graduate students to respect the academic views and research results of others, and cultivate their academic tolerance and teamwork awareness.

5.3. Promoting Graduate Students' Academic Growth and Professional Development Facing Self-Actualization Needs

Firstly, provide personalized academic guidance and support. Supervisors should provide personalized academic guidance and support for graduate students according to their academic interests, professional backgrounds, and career plans. Help graduate students formulate reasonable academic development plans, clarify learning and research goals, and guide them to choose research directions and topics suitable for themselves. In the research process, provide graduate students with necessary scientific research resources and technical support, help them solve problems and difficulties encountered in research, and promote their academic growth and progress.

Secondly, cultivate graduate students' academic innovation ability and practical ability. Academic innovation is the core competitiveness of academic research, and supervisors should pay attention to cultivating graduate students' academic innovation ability. Encourage graduate students to dare to break through traditional academic concepts and research methods and carry out innovative research work. Cultivate their scientific research thinking and innovation ability by guiding graduate students to participate in scientific research projects and publish academic papers. At the same time, strengthen the cultivation of graduate students' practical ability, guide them to combine academic research with practical application, participate in social practice and scientific research achievement transformation activities, and improve their ability to solve practical problems and professional competitiveness.

Finally, pay attention to graduate students' career planning and development. Supervisors should not only pay attention to the academic growth of graduate students but also care about their career planning and development. Understand the career interests and goals of graduate students and provide them with career planning guidance and suggestions. Help graduate students understand industry development trends and professional needs and improve their professional quality and employability by inviting industry experts to give lectures and carry out vocational training. Use their own academic resources and social networks to provide employment recommendations and internship opportunities for graduate students, helping them smoothly realize career transformation and development.

6. Conclusion

The construction of academic norms and harmonious supervisor-supervised relationship is an indispensable and important link in graduate education, and the two are interdependent and mutually promoting. Through the research on the correlation between academic norms and supervisor-supervised relationship, the analysis of current existing problems, and the exploration of influencing factors

based on SEM, strengthening academic norm education, implementing supervisor responsibilities, building an equal and interactive supervisor-supervised relationship, and promoting graduate students' self-actualization are effective paths to solve current problems. In the practice of graduate education, colleges and universities, supervisors, and graduate students should work together to create a good academic ecology and supervisor-student environment, laying a solid foundation for cultivating high-level talents with both moral integrity and ability, innovative spirit, and practical ability. In the future, it is necessary to further study the dynamic changes and interaction mechanisms between academic norms and supervisor-supervised relationship, continuously improve the construction paths and strategies, and promote the high-quality development of graduate education.

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