

Relationship between Supervisor and Postgraduate: New Insights from Questionnaire Survey Data

Qinzhong Hou

School of Automotive Engineering, Harbin Institute of Technology, Weihai, China

houqinzhong@126.com

Keywords: mentoring relationship, postgraduate education, statistical analysis

Abstract: The supervisor plays an important role in the development of postgraduates. In this study, the supervisor-postgraduate relationship was thoroughly investigated from the angle of postgraduate using questionnaire survey data collected from 345 postgraduates. Many interesting findings were obtained, including but not limited to: a. about a quarter of postgraduates indicate a tense relationship with their supervisors; b. a half of postgraduates are not satisfied with the current state; c. most of postgraduates cannot receive adequate guidance from their supervisors; d. the risk of supervisor-postgraduate conflicts increases significantly once the employeeship is forged. Findings from this study shed more lights on factors affecting mentoring relationship and are of crucial importance to develop effective countermeasures.

1. Introduction

Postgraduate education is the key component of high-level education and important to the innovation of technology. As the first responsible person of postgraduate, the supervisor plays an irreplaceable role and necessarily has great effects on the development of postgraduates. Therefore, the supervisor-postgraduate relationship is vital to ensure the quality of education for postgraduates.

The mentoring relationship between supervisor and postgraduate has attracted increasing attentions of researchers worldwide in recent years. The essence of mentoring relationship^[1], the governing system for supervisor and postgraduate^[2], and the characteristics of supervisor^[3] have been extensively investigated. Results from previous studies show that the imbalanced rights and duties, the insufficient mutual cognition, and the aberrance of relation between production and labor significantly affect the harmony of mentoring relationship. In addition, the communication mechanism, the evaluation and monitoring systems all play important roles^[4]. In terms of attributes of supervisor, the academic level, the morality and the personality of supervisors turned out to affect the mentoring relationship greatly^[5].

Although the mentoring relationship has been studied extensively in the past, most of previous studies are based on qualitative analysis and thus lack necessary empirical support for their inferences. In addition, the majority of past studies are conducted from the angle of supervisors or administrative departments, and voices of postgraduates are unfortunately ignored. To address these shortcomings, a questionnaire survey of postgraduates was conducted and the data were carefully used to investigate the mentoring relationship. Results from this study can further contribute to the knowledge of supervisor-postgraduate conflicts and help develop effective countermeasures.

2. Methodology

2.1. Data Collection

The questionnaire survey method was used for this study. To that end, an electronic questionnaire was firstly designed and then sent to postgraduates of multiple schools at the university of Harbin Institute of Technology. Note that the question in the questionnaire should be easily understandable to ensure the data quality and improve the engagement of respondents. Therefore, a total of 30 questions were set for each questionnaire including 28 choice questions and

two optional open questions. The data collection started in May 2020 and ended in July 2020. A total of 345 questionnaires were obtained finally and each questionnaire corresponds to a postgraduate. Because the questionnaire survey is anonymous, so the collected information can reflect the true attitude of postgraduates to the supervisor.

The statistical description for part of the questions is shown in Table 1. Note that only the questions that prompt intriguing inferences are presented in the table to save space.

Table 1 Descriptive statistic of questions.

No.	Description of question	Choice	Quantity	Percent/%
1	Situation with the supervisor	Well	261	75.7
		Tense	84	24.3
2	Type of relationship with supervisor	Research partnership	51	14.8
		Employeeship	21	6.1
		Mentoring	261	75.6
		Friend	12	3.5
3	Forcing to do trifles unrelated with research	Never	138	40.0
		Sometimes	189	54.8
		Frequently	18	5.2
4	Overall feeling for current state	Satisfied	183	53.0
		Unsatisfied	129	37.4
		Disappointed	33	9.6
5	The most stressful thing*	Paper publication	249	72.2
		Research project	195	56.5
		Relation with supervisor	36	10.4
		Job Hunting	93	27.0
6	Research tasks from supervisor	Too many	114	33.0
		Moderate	180	52.2
		Too few	51	14.8
7	Most important factor of research	Academic level of supervisor	72	20.9
		Patient guidance of supervisor	162	47.0
		Laboratory conditions	121	35.1
8	Guidance from supervisor	Insufficient	117	33.9
		Fair	54	15.7
		Sufficient	174	50.4
9	Potential factors of conflicts*	Research direction or publication	156	45.2
		Lack of guidance	253	73.3
		Arrogating too much private time	237	68.7
		Allowance from supervisor	93	27.0
10	Want a heart-to-heart talk with supervisor	Yes	102	29.6
		No	243	70.4
11	Preferred recourse when conflict with supervisor*	The supervisor	252	73.0
		Families and friends	210	60.9
		Department of university	54	15.7
12	Supervisor violate the right of authorship	Never or occasionally	310	89.9
		Frequently	35	10.1

Note: “*” indicates multi-choice questions in the questionnaire.

2.2. Correlation Between Choices

In order to investigate potential relationship among factors affecting mentoring relationship, the correlation coefficient between choices of various questions should be calculated. Note that the

commonly used Pearson's correlation coefficient which measures correlation for continuous variables cannot be used, because choices in the table are all categorical. Therefore, another correlation coefficient named Cramer's V was used here, which can be computed by:

$$V = \sqrt{(\chi^2/n) / [\min(k-1, r-1)]} \quad (1)$$

where n is the number of samples, k and r are the number of choices for two categorical variables, and χ^2 is the chi-square value of the variables calculated by:

$$\chi^2 = \sum_{i=1}^k \sum_{j=1}^r \left[\frac{(n_{ij} - n_i n_j / n)^2}{(n_i n_j / n)} \right] \quad (2)$$

where n_i and n_j are the number of observations for choice i and choice j , respectively, and n_{ij} denotes the frequencies that choice i and choice j both occur in a sample.

3. Discussion

3.1. Supervisor-postgraduate Relationship

The following discussions follow the order of questions in Table 1.

Of the 345 postgraduates, 24.3 percent of them showed a tense relationship with their supervisor, which should get sufficient attention because a harmonious mentoring relationship is the base to ensure the quality for postgraduate education.

For the type of relationship, 6.1 percent of postgraduates indicated an employment relationship with their supervisors, which is likely the omen of supervisor-postgraduate conflicts.

About 5 percent of postgraduates were frequently forced to do trifles unrelated with research, which is an undesirable finding. A postgraduate is unlikely to concentrate on the research if distracted by trifles frequently. As a result, the management department should strengthen supervision in case of right abuse for supervisors.

With regards to the current state of postgraduates, about half of them felt unsatisfied or disappointed to their research and study, which is expected. Postgraduates are faced with various pressures including paper publication, research project and job hunting making them depressed, especially when having a tense relationship with supervisors. Among various pressures, more than 70 percent of postgraduates were anxious about the publication of paper, because they are not qualified for graduation without publications according to regulations of the university. In addition, some postgraduates may receive too few research tasks and consequently have no opportunity to improve themselves making them disappointed to current state.

Almost half of postgraduates thought that the patient guidance of supervisors is crucially important to their research, but unfortunately about 34 percent of postgraduates showed that they cannot receive adequate guidance from supervisors. In addition, the lack of guidance is also most likely to lead supervisor-postgraduate conflicts as pointed out by 73.3 percent of respondents.

Interesting findings were found for the communication between supervisor and postgraduate. Most of postgraduates did not want to conduct heart-to-heart talk with their supervisors, while 73 percent of postgraduates primarily turn to their supervisors for help when getting in trouble. These findings show that postgraduates hope to keep distance with supervisors in personal lives, but approach supervisors honestly in the aspect of study.

Last but not least, about ten percent of postgraduates frequently violate the right of authorship (e.g., adding or removing co-authors arbitrarily, arranging the order of co-authors unreasonably), which should also attract additional attentions.

3.2. Interactions of Factors

The pairwise correlation between choices in Table 1 was computed to investigate the interactions of factors affecting supervisor-postgraduate relationship. Note that only factors with a correlation coefficient larger than 0.6 was treated as significantly correlated, as shown in Table 2.

Results in Table 2 indicate that forcing postgraduate to do trifles can result in employeeship, and

then contribute to the risk of a tense situation with supervisor. In addition, postgraduates are more likely to feel disappointed when receiving too few research tasks from their supervisors, because they are very eager to improve themselves through participating in research projects for the purpose of getting good jobs after graduating. The publication of paper is positively correlated with the academic level of supervisor, which indicates that the supervisor should improve their academic level to decrease the anxious of postgraduates about publications. Last, the probability of a tense situation with supervisor would increase if a supervisor frequently violates the right of authorship, because the authorship is closely related to the qualification of graduation.

Table 2 Strong correlation between choices.

Choice <i>i</i>	Choice <i>j</i>	Cramer's <i>V</i>
Tense situation with supervisor	Employeeship	0.75
Forcing to do trifles unrelated with research frequently	Employeeship	0.64
Too few research tasks	Disappointed for current state	0.63
Paper publication	Academic level of supervisor	0.71
Supervisor violate the right of authorship	Tense situation with supervisor	0.60

4. Conclusion

In this study, the mentoring relationship between supervisor and postgraduate was investigated using data collected from 345 postgraduates. The statistical and correlation analysis was used. A great number of factors affecting the harmony of supervisor-postgraduate relationship were obtained, for example: forcing postgraduates to do trifles unrelated with research, lack of patient guidance of supervisor, too few research tasks, the pressure of publishing papers, arrogating too much private time of postgraduates, academic level of supervisors and violating the right of authorship. Findings from this study can help better understand the mechanism of supervisor-postgraduate conflicts and develop effective countermeasures.

Acknowledgements

This research is supported by the Postgraduate Education and Teaching Reform Project of Harbin Institute of Technology (Grant No. JGYJ-2019043).

References

- [1] Kupersmidt, J. B., Stump, K. N., Stelter, R. L., et al. Predictors of premature Match Closure in Youth Mentoring Relationships. *American Journal of Community Psychology*, vol.59, no.1-2, pp. 25-35, 2017.
- [2] Xu, D.D., Liu, D., Zhu, Y.F., et al. What is the Training Environment Desirable for Doctoral Students: An Empirical Study based on A Doctoral Student Poll. *Journal of Graduate Education*, vol.4, pp.37-34, 2019.
- [3] Barrett, J. L., Mazerolle, S. M., Nottingham, S. L. Attributes of Effective Mentoring Relationships for Novice Faculty Members: Perspectives of Mentors and Mentees. *Athletic Training Education Journal*, vol.12, no.2, pp.152-162, 2017.
- [4] Qiao, C., Toh, Y. L., Teo, S. W. A., et al. A Narrative Review of Mentoring Programmes in General Practice. *Education for Primary Care*, vol.29, no.5, pp.259-267, 2018.
- [5] Kirk, M., Lipscombe, K. When A Postgraduate Student Becomes A Novice Researcher and A Supervisor Becomes A Mentor: A Journey of Research Identity Development. *Studying Teacher Education*, vol.15, no.2, pp.179-197, 2019.