
XIAOPING CHEN, YANMING SUN and ZISEN LI

ABSTRACT

University-enterprise cooperation is a necessary approach of cultivating engineering masters, among which enterprise mentors become a crucial factor influencing the cultivation quality. Therefore, impacts of enterprise mentors’ guidance on the practice performance of engineering masters, and the mediating role of engineering masters’ career competency in the mentors’ guidance and practice performance are observed in this research. The research results have shown that the career guidance and psychological guidance would promote the practice performance of engineering masters, and the career guidance can further enhance the practice performance through promoting the career competency of engineering masters. Meanwhile, the higher the degree of psychological guidance is, the more evident the effect of career guidance on the promotion of career competency will be, and the stronger the impact on the practice performance of engineering masters will be.

KEYWORDS

Engineering masters, career guidance, psychological guidance, career competency, practice performance.

PROPOSAL OF PROBLEMS

In recent years, poor engineering quality accidents have occurred frequently due to the career incompetence and low engineering ethical consciousness of engineering technicians, which has raised doubts on whether engineering talents cultivated have career competency or not [1]. Engineering master is a professional degree associated with the qualification of the engineering field, featuring the unification of profession and technicality. How to improve the career competency turns to be the top priority of the cultivation of engineering masters. It is explicitly stipulated in relevant policy documents issued by the Ministry of Education that taking professional practice in practice bases is a required link in the cultivation of professional postgraduates (including engineering masters). It is also proposed to greatly promote the dual-mentor
system inside and outside of the school, to give full play to the role of enterprise mentors, and to improve mentors’ ability and level of practice guidance specifically. In the actual practice, however, the “dual-mentor system” becomes a mere formality, due to the imperfect university-enterprise cooperative mechanism, indefinite assignment of responsibility of tutors, and unclear guidance mechanism, etc. which severely impacts the cultivation quality of engineering masters [2, 3]. Therefore, it is quite urgent to clarify the operating mechanism of enterprise mentors and implement the “dual-mentor system” practically for the educational administration of engineering masters. Whether enterprise tutors can improve the practice performance of engineering masters effectively? What’s the action mechanism of influence? And these problems are worth further research and discussion. Actually, enterprise mentors’ guidance of engineering masters relies more on the effective knowledge and skill transfer, and cultivates the career competency of engineering masters. Seen from the research status of enterprise mentor system, some scholars argue that the enterprise mentor system has a significant positive impact on the career competency, such as high organizational commitment, job satisfaction and low turnover intention, etc.; some scholars attempt to explore the potential mechanism of mentors’ impact on the work performance of mentees from various perspectives, including the social cognition [4], social exchange [5] and role stressor [6], but there is a lack of discussions about the action mechanism of mentors’ guidance from the view of career competency. On this basis, impacts of mentors’ guidance on the career competency and practice performance of engineering masters during the university-enterprise cooperation are further explored, aiming to provide theoretical and practical guidance for the better launch of the enterprise mentor team construction and improvement of cultivation quality for professional postgraduates.

THEORETICAL BASIS AND RESEARCH HYPOTHESIS

Demarcation of variables

Enterprise mentor guidance. It is pointed in the guidance role theory that enterprise mentor guidance consists of career guidance and psychological guidance, among which, the former focuses on the growth and progress of engineering masters in enterprises, including the work guidance, experience sharing, and arrangement of challenging work, etc. while the latter mainly helps engineering masters to establish a sense of identity and self-efficacy, including setting examples, providing positive evaluation and recognition, offering emotional support like life consultation and friendship, etc. [9].

Career competency of engineering masters. Spencer (1993) insisted that career competency referred to the potential motivation, characteristics, values, knowledge and skills related to high performance. Honor (2012) argued that career competency was the knowledge, skill, ability and attitude promoting the smooth fulfillment of tasks in a complicated and uncertain environment [10]. Accordingly, it is argued in this research that career competency is the potential and underlying characteristics required to be competent for the engineer position in the future, including the motivation, characteristics, attitude or values, self-image, knowledge, cognition or skills of a certain field, etc.

Practice performance of engineering masters. Practice performance refers to the individual work result required by practice organizations in the professional practice
of engineering masters [11]. Seen from the role classification, practice performance consists of task performance and relationship performance, among which, the former mainly refers to the work behavior or work result of engineering masters in accomplishing special tasks, like the work efficiency, etc. while the latter refers to activities with a positive impact on the work beyond work tasks, for instance, maintaining a good working relationship, etc.

**Mentors’ guidance and practice performance of engineering masters**

Related research has shown that enterprise mentors’ guidance contributes to the improvement of work performance [4, 12, 13]. In accordance with the organizational support theory, when in an unfamiliar environment, engineering masters would usually be at loose ends, and have a feeling of pressure, but enterprise support can relieve employees’ feeling of tension and pressure, while formal mentor system is just a kind of organizational support [6]. Consequently, when enterprise mentors provide assistance and support to engineering masters, they would perceive it and feel obliged to pay back the support, enhance their organizational commitment and adapt to their social identity in the role as a member, to repay mentors and enterprises with better practice performance [14]. Specifically, career guidance would help engineering masters to learn new knowledge and skills by setting challenging tasks for them, which would help establish related career competency directly, while psychological guidance would improve the self-efficacy and organizational identification through feedbacks and suggestions (Day & Allen, 2004), which is consistent with high performance. Therefore, the research hypotheses are as follows:

H1a: Career guidance has a significant positive impact on practice performance of engineering masters.

H1b: Psychological guidance has a significant positive impact on practice performance of engineering masters.

**Mediating role of career competency**

In accordance with the social learning theory, engineering masters show strong desire for new knowledge and new skills due to the lack of experience and skills, and they desire to acquire values, skills and codes of conducts from enterprise mentors [15]. Enterprise mentor system is a platform for the mutual sharing and exchange between enterprise mentors and engineering masters, from which, engineering masters can gain “work task”-based professional guidance like the work support and professional guidance to improve their ability and interpersonal skills of resolving problems, thus to enhance their practice performance [4]. Substantial empirical research also proves that career competency would promote the work performance of employees, as a decisive factor of the practice performance [16, 17]. Therefore, the research hypothesis is:

H2: Career competency of engineering masters plays a mediating role in the relationship between career guidance and practice performance.
Regulating role of psychological guidance

Generally, career guidance focuses on the specific guidance offered to engineering masters or clear route of finishing established goals, which would help improve the occupational skills and proficiency of tasks. Some research has found that great career guidance and support are offered, but new employees have limited ability of improvement. Lankau et al. (2006) showed that if new employees found the real conditions, or tasks and roles were out of expectation, they may be caught in role ambiguity and role conflict [18], and it was difficult for them to be thrown into work and study completely, while the role of career guidance would be limited. Hereby, if mentors pay attention to the psychological demands consciously and offer guidance after engineering masters enter the practice base, it would be more favorable for eliminating the role ambiguity and enhance the professional identity, thus to boost the positive impact of career guidance on the career competency of engineering masters. In other words, career guidance would be impacted by the psychological state of engineering masters in its promotion of career competency. So, it is supposed that:

H3a: Psychological guidance would regulate the relationship between career guidance and career competency of engineering masters.

H3b: The higher the degree of psychological guidance is, the greater the impact of career guidance on the practice performance of engineering masters through career competency will be, which shows the regulated mediating mode in the primary stage.

The theoretical framework of the research is shown in Fig. 1:

RESEARCH METHODS

Research samples and procedures

This research mainly employs the random sample, by distributing e-questionnaires to 1176 engineering masters from Guangdong, Jiangsu and Chongqing, and involved in such engineering fields as the electronic information engineering, architectural and civil engineering, biological engineering, mechanical engineering, software engineering, etc. It should be pointed out that this research mainly discusses the impact of enterprise mentors’ guidance on the practice performance of engineering masters. Therefore, while selecting target universities, those implementing the “dual-mentor system” could be selected. 732 valid questionnaires (effective rate 62.24%) are finally recovered. In these valid samples, male accounts for 71.6%, and female 28.4%; those 25 years old or below account for 30.5%, and those ranging between 26 and 35 take up 30.5%; people with in-service experience account for 28.8%, and those without in-service experience account for 71.2%; those from state-owned enterprises...
account for 31.0%, private enterprises 46.3%, joint ventures 3.6%, foreign-owned enterprises 4.4%, and public institutions 14.8%; those whose internship is less than 3 months account for 12.4%, 3-6 months 41.4%, 6-12 months 36.9%, and above 12 months 9.3%.

Variable measurement

The variable measurement adopts 5-point Likert scale for scoring, from “1-completely disagree to 5-completely agree”. Since some original scales are in English, this research revises the statements according to specific conditions based on translations of scales by referring to local research, and invites two experts from the field of management and three masters of management to discuss translation of scales and further revise it. Eventually, questionnaires are confirmed.

Guidance of enterprise mentors: MRI Global scale developed by Kram (1983) [19] and proved to be reasonable by domestic scholars is adopted, and it consists of 18 items, in two dimensions, including the career guidance, for instance “enterprise mentors always arrange some tasks for me to learn new skills”; and psychological guidance, for instance “enterprise mentors would have private contacts with me after work”. The Cronbach's α coefficient of occupational support and psychological support is 0.90 and 0.86 respectively. According to CFA result, all indexes of the occupational support ($\chi^2/df=4.56$, RMSEA=0.07, CFI=0.98 and TLI=0.97) and psychological support ($\chi^2/df=5.93$, RMSEA=0.08, CFI=0.95 and TLI=0.92) reach the acceptable level.

Career competency of engineering masters: Career competency scale developed by this research is employed, and it consists of 27 items, in six dimensions. Specifically, the business handling capability, including 7 items, such as “able to analyze the problem correctly if there are problems or contradictions”; communication and establishing relationship, including 5 items, such as “good at listening, able to understand others accurately and give feedbacks at the right time”; professional ethics, including 3 items, such as “strive to accomplish everything in work, regardless of big or small ones”; learning and innovation, including 4 items, such as “brave to try new methods and thoughts”; personality traits, including 5 items, such as “never miss any aspect that may be caught in problems in work”; customer service orientation, including 3 items, such as “establishing and maintaining a stable and trustworthy partnership with clients”. In this research, the Cronbach's α coefficient of the scale is 0.94, and that of all dimensions is 0.85, 0.82, 0.75, 0.77, 0.77 and 0.85 respectively. Based on CFA result, all indexes ($\chi^2/df=5.05$, RMSEA=0.07, CFI=0.86 and TLI=0.85) of the scale reach an acceptable level.

Practice performance: the scale developed by Motowidlo and Van Scotter (1994) [20] is developed, including 9 items. Practice performance is evaluated in the way of self-evaluation, for instance, “I have spent more time in finishing the work”. In this research, the Cronbach's α coefficient of this scale is 0.87. According to the confirmatory factor analysis result, all indexes of this scale ($\chi^2/df=3.18$, RMSEA=0.07, GFI=0.96 and TLI=0.94) reach an acceptable level.

Control variable: previous research has shown that demographic characteristic variables (gender, age, years of working) would impact the above predicted variable relation [13]. Meanwhile, the work experience of engineering masters before entering the organization and the communication atmosphere of the organization would also
impact the above-mentioned relation to a certain extent. On this basis, variables, like
the gender of the research targets, age, years of practice, communication atmosphere
of the organization, and work experience, should be controlled.

RESEARCH RESULTS

Common method biases analysis

The research data is from self-administered questionnaires of engineering masters,
which may lead to common variance. According to suggestions of Korsakoff (2003),
this research adopts CFA to test the discrimination validity of predictive variable, and
results have shown (table 1) that all indexes of four-factor model are better than the
rest, which is the most ideal in the fitting effect of actual data, showing that there are
no severe common method biases among variables, and predictive variables display
good discrimination validity, four different constructs indeed. To further inspect the
different data sources (self-evaluation of engineering masters, evaluation enterprise
mentors) and significant differences in the career competency of engineering masters,
69 valid matched samples are also collected, namely asking enterprise mentors to
evaluate the career competency of engineering masters, and engineering masters to
evaluate their own career competency at the same time. The T test of matched samples
shows there are no significant differences in the self-evaluation of engineering masters
and enterprise mentors’ evaluation, which supports the validity of self-administrated
data.

Note: One-factor model: career guidance + psychological guidance + career
competency + practice performance

   Two-factor model: career guidance + psychological guidance, career competency
   + practice performance

   Three-factor model A: career guidance, psychological guidance, career competency
   + practice performance

   Three-factor model B: career guidance + practice performance, psychological
   guidance, career competency

   Three-factor model C: career guidance, psychological guidance + practice
   performance, career competency

   Four-factor model: career guidance, psychological guidance, career competency,
   practice performance

Descriptive statistics

The mean value, standard deviation and correlation coefficient of all variables are
shown in table 2. The results indicate that there is a significant positive correlation
between the career guidance and practice performance of engineering masters (r=0.39,
p<0.01); psychological guidance is in significant positive correlation with the practice
performance of engineering masters (r=0.45, p<0.01), while career competency is in
significant positive correlation with the practice performance of engineering masters
Table 1. Confirmatory factor analysis result.

<table>
<thead>
<tr>
<th>Model</th>
<th>( \chi^2 )</th>
<th>( df )</th>
<th>( \chi^2/df )</th>
<th>CFI</th>
<th>TLI</th>
<th>RMSEA</th>
</tr>
</thead>
<tbody>
<tr>
<td>One-factor model</td>
<td>7492</td>
<td>1317</td>
<td>5.69</td>
<td>0.68</td>
<td>0.67</td>
<td>0.080</td>
</tr>
<tr>
<td>Two-factor model</td>
<td>4392</td>
<td>1316</td>
<td>3.34</td>
<td>0.84</td>
<td>0.83</td>
<td>0.057</td>
</tr>
<tr>
<td>Three-factor model</td>
<td>4254</td>
<td>1314</td>
<td>3.24</td>
<td>0.85</td>
<td>0.84</td>
<td>0.055</td>
</tr>
<tr>
<td>Three-factor model</td>
<td>5479</td>
<td>1314</td>
<td>4.17</td>
<td>0.79</td>
<td>0.78</td>
<td>0.066</td>
</tr>
<tr>
<td>Three-factor model</td>
<td>5118</td>
<td>1314</td>
<td>3.89</td>
<td>0.81</td>
<td>0.80</td>
<td>0.063</td>
</tr>
<tr>
<td>Four-factor model</td>
<td>3956</td>
<td>1311</td>
<td>3.02</td>
<td>0.87</td>
<td>0.86</td>
<td>0.053</td>
</tr>
</tbody>
</table>

Table 2. mean value, standard deviation and correlation coefficient of all variables.

<table>
<thead>
<tr>
<th>Variance</th>
<th>M</th>
<th>SD</th>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
<th>5</th>
<th>6</th>
<th>7</th>
<th>8</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Gender</td>
<td>1.2</td>
<td>8</td>
<td>0.45</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>2. Age</td>
<td>1.3</td>
<td>1</td>
<td>0.47</td>
<td>-</td>
<td>-</td>
<td>-0.08*</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>3. Work Experience</td>
<td>1.7</td>
<td>2</td>
<td>0.57</td>
<td>0.05</td>
<td>-</td>
<td>-0.12**</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>4. Communication atmosphere</td>
<td>3.9</td>
<td>5</td>
<td>0.50</td>
<td>-0.06</td>
<td>-0.04</td>
<td>-0.03</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>5. Practice time</td>
<td>2.4</td>
<td>3</td>
<td>0.82</td>
<td>-</td>
<td>* 0.12*</td>
<td>0.03</td>
<td>-0.02</td>
<td>0.07*</td>
<td></td>
<td></td>
</tr>
<tr>
<td>6. Career guidance</td>
<td>3.8</td>
<td>1</td>
<td>0.67</td>
<td>-0.05</td>
<td>0.01</td>
<td>-0.03</td>
<td>0.32**</td>
<td>0.13**</td>
<td></td>
<td></td>
</tr>
<tr>
<td>7. Psychological guidance</td>
<td>3.7</td>
<td>8</td>
<td>0.61</td>
<td>-0.05</td>
<td>0.03</td>
<td>-0.05</td>
<td>0.40**</td>
<td>0.10*</td>
<td>0.81**</td>
<td></td>
</tr>
<tr>
<td>8. Career competency</td>
<td>4.0</td>
<td>1</td>
<td>0.40</td>
<td>-0.01</td>
<td>-0.05</td>
<td>-0.10**</td>
<td>0.70**</td>
<td>0.03</td>
<td>0.46**</td>
<td>0.56**</td>
</tr>
<tr>
<td>9. Practice performance</td>
<td>4.1</td>
<td>1</td>
<td>0.40</td>
<td>0.07</td>
<td>0.02</td>
<td>-0.07</td>
<td>0.54**</td>
<td>0.04</td>
<td>0.39**</td>
<td>0.45**</td>
</tr>
</tbody>
</table>

\( r=0.73, \ p<0.01 \). The above results provide preliminary support to research hypotheses. In the meantime, it is also indicated that practice performance and career competency of engineering masters are also in positive correlation with the communication atmosphere of organizations \( r=0.54, \ p<0.01; r=0.70, \ p<0.01 \).

Note: * means \( p<0.05 \), ** means \( p<0.01 \), *** means \( p<0.001 \), the same below.

**Hypothesis testing**

Multiple linear regression is adopted for the data analysis. Standardized processing is conducted for predictive variables before the analysis, and results are shown in table 3:

Hypothesis 1: model 6 and 7 show that career guidance has a significant positive impact on the practice performance of engineering masters (\( \beta=0.25, \ p<0.001 \)), which supports H1a; meanwhile, psychological guidance has a significant positive impact on the practice performance of engineering masters (\( \beta=0.28, \ p<0.001 \)), which supports H1b.

Hypothesis 2: the mediation measurement procedure proposed by Baron and Kenny (1986) was put forward to test hypothesis 2: (1) the independent variable career guidance has a significant impact on the dependent variable practice performance, and it turns to be supported by the result; (2) the independent variable career guidance has
Table 3. Multiple linear regression result.

<table>
<thead>
<tr>
<th>Variables</th>
<th>Career Competency</th>
<th>Practice Performance</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Model 1</td>
<td>Model 2</td>
</tr>
<tr>
<td>Gender</td>
<td>0.03</td>
<td>0.04</td>
</tr>
<tr>
<td>Age</td>
<td>-0.02</td>
<td>-0.02</td>
</tr>
<tr>
<td>Work experience</td>
<td>-0.08**</td>
<td>-0.08**</td>
</tr>
<tr>
<td>Communication atmosphere</td>
<td>0.69***</td>
<td>0.61***</td>
</tr>
<tr>
<td>Practice time</td>
<td>-0.02</td>
<td>-0.05</td>
</tr>
<tr>
<td>Career guidance</td>
<td>0.27***</td>
<td>0.06</td>
</tr>
<tr>
<td>Psychological guidance</td>
<td>0.29***</td>
<td>0.28***</td>
</tr>
<tr>
<td>Occupation * Psychology</td>
<td>0.12**</td>
<td></td>
</tr>
<tr>
<td>Career competency</td>
<td></td>
<td></td>
</tr>
<tr>
<td>F</td>
<td>142***</td>
<td>155***</td>
</tr>
<tr>
<td>R²</td>
<td>0.50</td>
<td>0.56</td>
</tr>
<tr>
<td>ΔR²</td>
<td>-</td>
<td>0.06</td>
</tr>
</tbody>
</table>

Hypothesis 3: it can be learnt from model 4 that the interaction item of career guidance and psychological guidance has a significant positive impact on the career competency of engineering masters (β=0.12, p<0.001). In order to further test whether the interaction effect meets the expectation, the impact of different degrees of psychological guidance on the career competency of engineering masters is drawn with the positive and negative standard deviation of the mean value as the base, and the interaction effect is drawn in Fig.3. According to the results, the positive correlation between the career guidance and career competency of engineering masters has a significant impact on the mediating variable the career competency of engineering masters (β=0.27, p<0.001); (3) model 8 suggests that the mediating variable career competency has a significant positive impact on the dependent variable practice performance (β=0.68, p<0.001); (4) with practice performance as the dependent variable, after the independent variable supportive guidance style and the mediating variable career competency are included in the regression model, the effect of career competency stills remains to be significant (β=0.64, p<0.001), while the effect of career guidance changes significantly (β=0.08, p<0.05). The results indicate the mediating role of career competency in the relationship between career guidance and practice performance of engineering masters, and H2 is supported.

![Fig. 3. Interaction effect of two kinds of guidance on the career competency of engineering masters.](image-url)
In high degree of psychological guidance is stronger than that in low degree of psychological guidance, so H3a is validated.

Model 10 shows that the interaction item of career support and psychological support does not significantly impact the practice performance (β=0.05, ns), and the entire model reflects the moderating effect of the primary stage, while the result supports H3B. To test H3B more intuitively, namely the adjusted mediating role, SPSS designed by Hayes (2013) is employed for the mediating variable test with Bootstrap method \[21\]. The sample size is set as 5000, offset correction is employed, and 95% of the confidence interval is selected. The data result indicates that the mediating variable career competency plays a mediating role in the interactive impact of two guidance styles on the practice performance of engineering masters (LLCI=0.029, ULCI=0.837). Furthermore, indirect effects of the low, medium and high control guidance styles are distinguished according to the mean value, mean value minus the standard deviation, and mean value plus the standard deviation. Results are shown in Table 4: in high degree of psychological guidance, the mediating effect of career competency is significant (LLCI=0.037, ULCI=0.139), and the value of mediating effect is 0.084; in medium degree of psychological guidance, the mediating effect is still significant (LLCI=0.009, ULCI=0.094), but it drops to 0.050; in degree level of psychological guidance, the mediating effect becomes insignificant (ULCI=0.022, ULCI=0.058), suggesting that the higher the degree of psychological guidance is, the greater the impact of career guidance on the practice performance of engineering masters through their career competency will be, and hypothesis 3b is validated.

<table>
<thead>
<tr>
<th>Psychological guidance</th>
<th>Mediating effect</th>
<th>Boot SE</th>
<th>Boot LLCI</th>
<th>Boot ULCI</th>
</tr>
</thead>
<tbody>
<tr>
<td>Low (-0.611)</td>
<td>0.016</td>
<td>0.021</td>
<td>-0.022</td>
<td>0.058</td>
</tr>
<tr>
<td>Medium (0.000)</td>
<td>0.050</td>
<td>0.022</td>
<td>0.009</td>
<td>0.094</td>
</tr>
<tr>
<td>High (0.611)</td>
<td>0.084</td>
<td>0.026</td>
<td>0.037</td>
<td>0.139</td>
</tr>
</tbody>
</table>

Table 5. Verificaton results of hypotheses.

<table>
<thead>
<tr>
<th>No.</th>
<th>Research Hypothesis</th>
<th>Empirical conclusion</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>H1a: Career guidance has a significant positive impact on practice performance of engineering masters.</td>
<td>Supported</td>
</tr>
<tr>
<td></td>
<td>H1b: Psychological guidance has a significant positive impact on practice performance of engineering masters.</td>
<td>Supported</td>
</tr>
<tr>
<td>2</td>
<td>H2: Career competency of engineering masters plays a mediating role in the relationship between career guidance and practice performance.</td>
<td>Supported</td>
</tr>
<tr>
<td>3</td>
<td>H3a: Psychological guidance would regulate the relationship between career guidance and career competency of engineering masters.</td>
<td>Supported</td>
</tr>
<tr>
<td></td>
<td>H3b: The impact of psychological guidance on the relationship between career guidance and practice performance of engineering masters is reflected by the mediating role in the primary stage</td>
<td>Supported</td>
</tr>
</tbody>
</table>
Note: LLCI represents the lower limit of the confidence interval, and ULCI represents the upper limit of the confidence interval.

Research results

According to the above analysis, verification results of the research hypotheses are obtained (as shown in table 5).

DISCUSSIONS AND SUGGESTIONS

Result discussion

It is discovered in this research that mentors’ career guidance has an indirect impact on the practice performance of engineering masters, since the career guidance can boost the career competency of engineering masters, and further promote their practice performance. Different from previous research perspectives, the mediating mechanism, namely career competency, is introduced in this research, which interprets the action mechanism of mentors’ guidance on the practice performance of engineering masters, and provides an interesting direction for the research on the enterprise mentor system. In addition, for research on the relationship between the mentor guidance and outcome variable of mentees, scholars usually explore impacts of career guidance and psychological guidance on mentees \[23, 24\], and few would explore whether the integration of the two guidance behaviors would promote the ability of mentees Management practice would usually highlight the career guidance of enterprise mentors, insisting that career support is more consistent with the guidance in workplace \[25, 26\], but ignore the fact that the effect of mentors’ career guidance cannot be separated from the support of psychological guidance \[27\]. This research shows that the enterprise mentors’ guidance integrating the career support and psychological support is crucial for promoting the career competency of engineering masters, among which, the higher the degree of psychological guidance is, the more evident the effect of career guidance on the career competency of engineering masters will be, and the stronger the impact on practice performance will be. Therefore, enterprises mentors must not ignore the psychological care while emphasizing work tasks, pay more attention to the psychological changes of engineering masters, and provide guidance in time if needed. In this way, it can get double the guidance effect. This discovery is favorable for enlightening the academic circle and school managers in reflecting on the construction of enterprise mentor team, and it also makes beneficial supplements to relevant research on the dual-mentor system.

Suggestions for management

It can be learnt from the research results that enterprise mentors should not only provide career guidance to engineering masters, but also offer psychological care, inspire their sense of identity and self-efficacy, and promote the smooth transition from “postgraduates” to “professionals”. The ideological morality, personality charm, work attitude and way of doing things of enterprise mentors would impact the career competency of engineering masters significantly, which just coincides with the fundamental task “strengthening moral education and cultivating people” of
postgraduate education in China, and provides reflections and strategies for the construction of dual-mentor system.

Above all, strengthen the system construction of mentor team. On one hand, colleges and universities must strengthen the selection of enterprise mentors, and make proper acceptance requirements. Previously, colleges and universities mainly took the operational guidance, scientific research ability, practice experience and titles into account, and seldom involved the ideological morality, personality trait and humanistic care to postgraduates. Consequently, the above contents should be explicitly listed while setting conditions. On the other hand, colleges and universities must reinforce the training for enterprise mentors and their responsibility of cultivation. By launching the training for new mentors regularly and compiling guidance manuals, colleges and universities should clarify the mentors’ responsibilities of career guidance and psychological guidance, and introduce the process and specific requirements of cultivating engineering masters in details, so that they can clearly understand and grasp basic conditions of the postgraduate education. Secondly, a communication platform between school mentors and enterprise mentors should be established. School mentor is the first person responsible for the postgraduate cultivation. Though enterprise mentors are more closely related to engineering masters in the practice base, school mentors pay more attention to the cultivation of professional ability, while enterprise mentors focus more on the cultivation of professional ability. Therefore, common guidance from school mentors and enterprise mentors is required. Both school and enterprise managers should establish a platform for the regular communication between mentors on both sides, have regular discussions according to the scientific research progress, and clarify the contents of professional practice and scheduling. It would not only allow enterprise mentors to further be familiar with and understand talent cultivation requirements, but also fully mobilize the subjective initiative of engineering masters, allow them to be thrown into professional practice securely, and satisfy the demands of school mentors, enterprise mentors and postgraduates. Finally, a good educational atmosphere should be created in the practice base. Based on the research results, practice performance would also be impacted by the communication atmosphere of the organization, besides the mentors’ guidance. School and enterprise managers should be conscious to reinforce the cultural construction in a practice base and develop a good communication environment during the process of dual-mentor team construction. Engineering masters can enhance the understanding of work contents and interpersonal relationship in the practice unit, and reinforce their cognition of the organization and roles in work through the communication with enterprise mentors or other colleagues, so as to get integrated into the organization, improve their self-efficacy, and enhance their career competency and practice performance as much as possible.

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