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Teachers' teaching and learning motivation in China

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STUDENT PERCEPTIONS OF TEACHING: RELATIONSHIP WITH TEACHER PSYCHOLOGICAL FACTORS, WORKING CONDITIONS, PRINCIPAL LEADERSHIP

Abstract

Student perceptions of teaching have been regarded as a significant predictor of student learning outcomes. Research on school-teachers' teaching has indicated that various factors are related to student perceptions of teaching. This study explores the relationship between a teacher's personal and environmental factors and student perceptions of teaching. Data were collected from a survey of 11,705 primary students and 419 teachers from Shanghai, China. Structural equation modelling revealed that teachers' sense of self-efficacy appeared to be an important predictor for student perceptions of teaching. Moreover, self-efficacy also mediates the positive indirect relationships of task autonomy, support from principals, colleagues and teacher educators with student perceptions of teaching. These findings can guide school leaders and policymakers to implement strategies to further improve teaching practices.

This Chapter has been submitted for publication in an adapted form as Xin, Z., Saab, N., & Admiraal, W (under review). Student perceptions of their teachers' teaching: relationship with teacher characteristics and school environment.

4.1 Introduction

Numerous studies have clearly revealed that students' learning outcomes highly depend on their perceptions of teaching (Scherer et al., 2016; Thoonen et al., 2011). Given this relationship, student perceptions of teaching quality have received attention in the last decades as a way to indicate teaching quality (Scherer et al., 2016). Previous studies have demonstrated that various school environmental factors may affect teaching quality, such as leadership from school leaders (Ng & Pun, 2013), support from colleagues (Supovitz et al., 2010), task autonomy (Q. Wang & Zhang, 2014), and pressure from work (R. Richards, Hemphill, & Templin, 2018). Furthermore, many studies reported that the relationship between environmental factors of the school organization and teaching might be mediated by teacher psychological factors as teachers might appraise the environmental strains differently (Herman, Prewett, Eddy, Savala, & Reinke, 2020; R. Richards et al., 2018). It means that teacher characteristics have the potential to play as mediators to explain how the influence of working conditions on teaching quality through teacher individual characteristics. We assume that particular work features such as work pressure and lack of autonomy may affect teacher characteristics such as self-efficacy, which in turn, would influence their teaching quality. Yet, the interplay between teacher personal psychological factors and environmental factors to explain teaching is largely ignored (see, e.g. Thoonen et al. 2011).

The current study extends this line of research by exploring the relationship between working conditions, teacher characteristics, and student perceptions of teaching in primary schools. More specifically, the study examines the mediating role of teacher characteristics in the relationship between work conditions and teaching.

4.2 Conceptual framework

4.2.1 *Student perceptions of teaching quality*

Students' perceptions of teaching quality can be related to their learning outcomes. For example, Fauth et al. (2014) report that student perceptions of teacher support and cognitive activation in teaching were positively related to students' development of subject-specific interest, and perceptions of classroom management were positively related to student academic achievement. Similar results are reported by Martin,

Foy, Mullis, and O'dwyer (2011). These authors explored the relationship between student perceptions of teaching and student achievement and indicate that student perceptions of the safety of the classroom environment were positively related to students' learning outcomes.

Adequate pacing, clarity of instruction, classroom management and climate, as well as close monitoring, reflect the key aspects of student perceptions of teaching (Kunter & Baumert, 2006; Wagner et al., 2013). Based on previous studies, a prominent model of student perceptions of teaching that summarizes the most important aspects of quality has been developed by Klieme et al. (2009). In a study that explores the relationship between student perceptions of teaching and teachers' learning, they distinguish three aspects of teaching quality. First, *classroom climate support*, which includes specific aspects of the teacher-student positive relationship and constructive teachers' feedback. In order to enhance a positive climate, teachers should provide extra help when needed, respect students' questions and care about students. Second, *classroom management*, which refers to classroom rules and procedures, coping with disruptions, and supporting smooth transitions, which are crucial for students' learning gains. Third, *cognitive activation*, which refers to the encouragement of students' cognitive engagement by helping students to apply challenge tasks, explore theoretical conceptions and integrate knowledge. Previous studies have shown that cognitive activation indeed fosters students' cognitive engagement, and students' ability to elaborate knowledge (Kunter et al., 2007).

4.2.2 Teacher psychological factors, school environment and leadership related to teaching

The framework used to guide our inquiry is based on a general model developed by Thoonen et al. (2011). This model assumes that variations of teaching practices can be explained by teacher characteristics and the organizational setting in which they work, as well as the leadership from school leaders. We have developed a model with these three general constructs and variables included in these constructs (see Figure 4.1). The presence of effects implies that the strength of working conditions, leadership from leaders, and teacher psychological factors have a significant effect on various teaching quality.

In addition, Baron and Kenny (1986) identified mediators have the potential to ex-

plain how external physical events take on internal psychological significance. It is a variable that explains the relation between the independent and the dependent variable. For teaching, an accumulating body of research indicates that teachers' self-efficacy, learning motivation, beliefs of learning have the potential to be treated as alterable variables, and demonstrate the robust path linking the relationship between school working conditions, leadership from leaders and teaching quality (Bandura & Adams, 1977; W. Liu et al., 2018; Richardson, 1996). For our study, this would mean that the relationship between working conditions, principal leadership and teaching quality has the potential to be mediated by teacher characteristics. Based on basis of these findings, we intend to treat teacher characteristics as mediators to explain how the influence of working conditions on teaching quality through teacher individual characteristics.

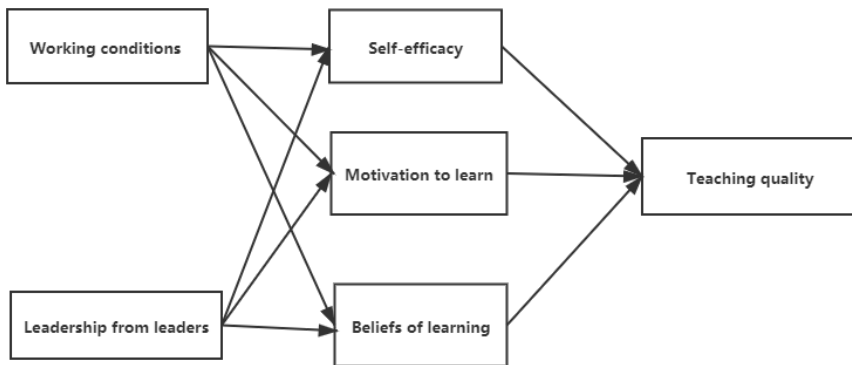


Figure 4.1

A theoretical model of the relations among teacher psychological factors, working conditions and teaching quality.

4.2.3 Teacher psychological factors related to teaching

Numerous studies into teaching have shown that several factors, such as self-efficacy (Mintzes et al., 2013), learning motivation (Lam et al., 2010), and beliefs in learning (Roehrig & Kruse, 2005) affect teaching.

Self-efficacy in teaching refers to teachers' belief in their capability to make a dif-

ference in student learning (Tschannen-Moran et al., 1998). Tschannen-Moran and Hoy (2001) indicated that the greater a teacher's self-efficacy in teaching, the more willing they were to demonstrate acceptance of new ideas and experiment with new instructions and subsequently enhancing the quality of the instruction. Other researchers, however, have come to a somewhat different conclusion, reporting that teachers with more confidence in, and satisfaction with, their teaching were less inclined to change their current teaching approach. (e.g., Supovitz et al., 2010).

Teachers' learning motivation refers to the reasons for engaging in learning activities (Deci & Ryan, 2002). Tschannen-Moran and Hoy (2001) found that the more motivated teachers are to participate in learning activities, the more creative instructional strategies they used in teaching subsequently, showing better teaching practices. Suchodoletz et al. (2018) come to a similar conclusion, indicating that teachers who are more motivated to participate in learning activities may acquire more teaching techniques, and ultimately implement new teaching strategies into their teaching practices.

Teacher beliefs about learning refer to what teachers know about learning and how they think their teaching may contribute to an understanding of the troubles and pitfalls in student learning (Bolhuis & Voeten, 2004). Some studies indicate that beliefs about learning may affect teaching (Donche & Van Petegem, 2011). For example, in a survey of 260 Dutch teachers in secondary education, Bolhuis and Voeten (2004) report that teachers with a belief in intelligence as a fixed quality were more likely to give up when confronted with difficulties when implementing new teaching strategies, whereas teachers with a belief in intelligence as a malleable quality were more concerned with developing their teaching competence and improving teaching.

4.2.4 Working conditions related to teaching

Many studies have indicated that working conditions in school can have a significant influence on teaching. Wal et al. (2020) have developed a framework to divide teachers' perceptions of working conditions into four aspects and provided a definition for each aspect:

Task autonomy, which comprises the extent to which teachers can decide on when and how to execute their work; *Collegial support*, which refers to helpful social

interactions available from colleagues on the job; *Work pressure*, which refers to challenging aspects of the job, such as workload and the pace of work; *Emotional pressure*, which concerns the extent to which teachers perceive their jobs to require emotional investment, such as emotional load, mental strain or suspense.

In a survey of 502 teachers from 32 elementary schools in the Netherlands, Thoonen et al. (2011) found that task autonomy may reinforce the extent to which teachers internalized school values as their personal goals and subsequently affect their classroom instruction. Rosenholtz (1989) reported the more emotional pressure teachers report, the more reluctant they are to improve their teaching quality. They are also more prone to teaching in a routine way, avoiding mistakes, and maintaining their present instructions.

4.2.5 Leadership related to teaching

Several leadership concepts have been posited to describe various leadership practices, such as transformational leadership (Finnigan, 2010), transactional leadership (Eyal & Roth, 2011), and instructional leadership (Liu, Hallinger, & Feng, 2016). From these, the concept of transformational leadership seems to provide the most useful insights into teachers' learning and teaching (Yang, 2014). Transformational leadership focuses on the change, and how to motivates followers to do more than they originally planned or they thought possible (Bass & Avolio, 1994). Bass (1985) identifies three aspects of transformational leadership: 1) stimulating version building, which refers to teachers' willingness to internalize organizational goals as personal goals; 2) providing individualized support, which refers to an attempt to understand and satisfy teachers' needs, and 3) supporting intellectual stimulation, which refers to encourage teachers to question their own beliefs, and eventually to enhance teachers' willingness to learn. In this study, we focus on the transformational leadership from principals and teacher educators, who are often considered to have a great influence on teachers' learning and teaching (Lunenberg, Korthagen, & Swennen, 2007). We expect that principals and teacher educators have the potential to help teachers to reflect on their own beliefs and values, and encourage them to update traditional approaches through intellectual stimulation. Previous studies also show that principals and teacher educators as transformational leaders use intellectual stimulation to enhance teachers' learning performance and help them in their professional

development (Leithwood & Jantzi, 2005; Silins, 1994).

4.2.6 This study

In sum, the present study will explore a comprehensive overview of teacher characteristics (e.g., self-efficacy, beliefs about learning, learning motivation), working conditions (e.g., work and emotional pressure, task autonomy, and collegial support), and leadership from school principals and teacher educators that are related to the student perceptions of teaching quality in a Chinese context. Besides direct effects, we also intend to explore the mediating effects of teacher characteristics on the relationship between work conditions and teaching quality. The following research questions are formulated to guide the present study:

- 1: How are working conditions, school leadership, and teacher psychological factors related to students' perceptions of teaching?
- 2: Do teacher psychological factors mediate the relationship between working conditions, principal leadership, and students' perceptions of teaching?

4.3 Method

4.3.1 Procedure and participants

This study was conducted in 12 primary schools in Shanghai. Schools in Shanghai are classified into either “key” or “ordinary” schools. The “key” schools are often given additional resources, and their teaching quality is better than in “ordinary” schools. We selected six “key” schools and six “ordinary” schools” to recruit our participants. A total of 419 teachers and 11,705 students from these 12 primary schools in Shanghai participated in this study. The mean age of teachers was 37.7 years ($SD=8.5$). The mean age of students was 10.3 years ($SD=1.4$).

Participation in the study was strictly voluntary and confidential for both teachers and students. Upon recruitment, principals authorized the study within their schools, and teachers, students and their parents were asked to sign an informed consent regarding their collaboration in the study. Ethics approval for this study was granted by the Leiden University Graduate School of Teaching (ICLON). Teachers completed a

questionnaire about their perceptions of their characteristics, working conditions, and leadership from principals and teacher educators in their offices. Their students were instructed by trained staff to finish a student questionnaire to evaluate their teachers. Then students completed a questionnaire in class about teaching quality. Each teacher indicated which teacher students were requested to evaluate, and each item was read aloud to the class to prevent reading difficulties. After that, students were given enough time to respond.

4.3.2 Data

The questionnaires used in this study are based on existing questionnaires. Items originally in English and Dutch were carefully translated and adjusted for the Chinese context, and translated back by experienced educational researchers. Then the questionnaires were piloted. The student survey has been piloted with 30 students around 10-years old. Items that cause difficulties with understanding were revised for more suitable wording. The teacher questionnaire has been piloted with 30 teachers and some items were revised for a more suitable wording.

Considering that some items are used in a Chinese context for the first time, exploratory factor analysis (EFA) with oblimin rotation was performed per variable to explore the underlying structure. For a few missing item scores, imputation with the mean score of the relevant scale was used to eliminate missing values. Items with factor loadings > 0.4 on one factor were included; all other items were excluded. The questionnaire with 127 items has been reduced to 89 items distributed over 17 scales. The Cronbach's alphas of each scale, example items and the internal reliability are shown in Appendix 5.

4.3.3 Student perceptions of teaching

To assess student perceptions of teaching in the class the questionnaire of Fauth and colleagues has been used (Fauth et al., 2014). The instrument consists of three subscales: classroom management (5 items); cognitive activation (7 items); and supportive climate (9 items), a total of 21 items. Students were asked to evaluate their teaching quality from 1= strongly disagree to 4= strongly agree. The 21 items were subjected to an EFA to determine the underlying factors. The final analysis consisted

of two components of 19 items, which explained 41.9% and 11.5% of the variance in scores, respectively. The first component includes the original scales of cognitive activation and supportive climate and is labelled ‘Classroom teaching’, indicating exploration of students’ prior knowledge, the way of thinking, and a good relationship between teachers and students. The second component is labelled ‘Classroom management’ with items on classroom rules and procedures dealing with disruptions, and ensuring smooth transitions in the classroom. The Cronbach’s alphas of classroom teaching and classroom management are 0.91 and 0.89, respectively.

4.3.4 Teacher conceptions of learning

Teachers’ beliefs about learning are operationalized by the Teacher Conception of Learning Inventory (Bolhuis & Voeten, 2004). It included two aspects: teachers’ conception of student learning (24 items) and teachers’ conception of their own learning (22 items). Each aspect consists of five subscales (External versus Internal Regulation, Reproductive versus Constructive Knowledge, Individual versus Social Learning, Fixed versus Dynamic Ability and Intolerance of Uncertainty versus Tolerance of Uncertainty). Each item contained two opposite statements about the same topic, a more process-oriented statement, and a more traditional statement. Teachers were asked to indicate to what extent they agreed with the statement of learning conception. A four-point scale was used: (1) I quite agree with the statement on the left; (2) I agree somewhat more with the statement on the left than I do with the one on the right; (3) I agree somewhat more with the statement on the right than I do with the one on the left; and (4) I quite agree with the statement on the right. Reliability analysis of teachers’ conception of student learning revealed that only Reproductive versus Constructive Knowledge ($\alpha=0.64$), Individual versus Social Learning ($\alpha=0.59$) and Fixed versus Dynamic Ability ($\alpha=0.67$) were acceptable. For teachers’ conception of their own learning, only Fixed versus Dynamic Ability ($\alpha=0.67$) showed reliabilities for both scales. These four scales are labelled “conception of student knowledge”, “conception of student teamwork”, “conception of student teamwork”, “conception of student learning ability” and “conception of teacher learning ability”. These factors are included in subsequent analyses.

4.3.5 Teacher self-efficacy

The Teacher Sense of Efficacy Scales (Tschannen-Moran & Hoy, 2001) were used in this study. It included instructional strategies, classroom management and student engagement three subscales. The 12 items were subjected to an exploratory principal component factor analysis with oblimin rotation to determine underlying factors. The final factor analysis consisted of two components of 11 items, which explained 55.3% and 9.6% of the variance in self-efficacy scores, respectively. The first component was labelled 'efficacy in teaching' (7 items) and included items from the original scale instructional strategies and student engagement. The second component was labelled 'efficacy in classroom management' (4 items). Teachers were asked to indicate their feeling of self-efficacy on a 9-point scale: 1=none; 3=very little; 5=some influence; 7=quite a bit; 9= a great deal. The Cronbach's alphas of the two factors were 0.88 and 0.88, respectively, showing satisfying reliabilities for both scales.

4.3.6 Teacher motivation

Teachers' learning motivation has been measured with items from the Teacher Motivation Inventory (Lam et al., 2010). The inventory is based on Self-Determination Theory (SDT), implying that individuals may have multiple reasons for engaging in a certain behaviour (Deci & Ryan, 2002). It consists of four subscales: intrinsic motivation, identified regulation, introjected regulation, and external regulation, respectively. Five items per subscale were presented randomly to avoid measurement effects. Teachers responded to the items by indicating what extent each item is relevant to their motivation on a 5-point scale (1= Strongly Disagree, 2= Disagree, 3=Neither Agree nor Disagree, 4= Agree, 5= Strongly Agree).

The 20 items were subjected to an EFA to determine the underlying factors. Three components with 16 items were extracted, explaining 44%, 15% and 7.7% of the variance in motivation scores, respectively. The first component includes items from the original subscales intrinsic motivation and identified regulation. According to the perspective of self-determination theory (Deci & Ryan, 2002), the combination of intrinsic motivation and identified regulation is designated as autonomous motivation, hence the first component is labelled 'autonomous motivation'. This means that teachers engage in a learning activity for its inherent enjoyment and pleasure, or

they pursue a meaningful outcome from the activity. The example item is 'I participated because I am interested in it'. The second component has been labelled 'external regulation', which implies that the reason why a teacher engages in activities is to attain material incentives, recognition or rewards, or to avoid punishment. An example item is 'I participated because it was a duty assigned by my leaders'. The third component is labelled 'controlled introjected regulation', with items indicating the introjected regulation of teachers' motivation. This means that the reasons why teachers participate in activities are not well-internalized and their involvement is to avoid feelings of guilt or shame. An example item is 'I participated because I would feel embarrassed to explain my absence to others'. The Cronbach's alphas of autonomous motivation, controlled external regulation and introjected regulation were 0.94, 0.83 and 0.62, respectively, showing satisfying reliabilities.

4.3.7 Transformational leadership

Two aspects of leadership have been measured. First, the Principal Transformational Leadership Questionnaire (Geijsel et al., 2009) was used to measure principal leadership. It includes six items. All items are scored on a 4-point Likert-type scale with 1= 'almost never' to 4= 'almost always'. The reliability of this scale was 0.90 in terms of Cronbach's alpha.

Second, 10 items regarding teacher educator leadership were based on a survey from Supovitz et al. (2010) study, with two scales: teacher educator trust and focus on instruction. Teachers responded to the items on a 5-point scale (1= Strongly Disagree, 2= Disagree, 3=Neither Agree nor Disagree, 4= Agree, 5= Strongly Agree). The result of EFA shows only one component, teacher educator leadership, explaining 57% of the variance in scores. This scale refers to how teacher educators encourage teachers' trust and support instructional improvement, shows satisfying reliability, with a Cronbach's alpha of 0.91.

4.3.8 Working conditions

Teachers' perceptions of working conditions were assessed using the Dutch Social Psychological Work Demands questionnaire (Veldhoven & Meijman, 1994). This comprises 19 items, answered on a 4-point Likert-type scale, with 1= 'almost never'

to 4= ‘almost always’. An EFA was performed in order to determine the underlying factors. Four scales with 17 items were distinguished: 1) Emotional pressure – four items explaining 25.7% of the variance in scores, showing teacher emotional pressure at work; 2) Task autonomy – four items explaining 15.5% of the variance in scores, demonstrating how teachers perceived their autonomy at work; 3) Colleague support – four items explaining 10.2% of the variance in scores, indicating teachers’ receipt of support from colleagues; 4) Work pressure – five items explaining 7.1% of the variance in scores, showing teachers’ perceived pressure from their work. The Cronbach’s alphas for emotional pressure, task autonomy, social support from colleagues and work pressure were 0.81, 0.62, 0.68 and 0.73, respectively, indicating a moderate- to high-reliability.

4.4 Analysis

Confirmatory factor analyses (CFA) were conducted to test the construct validity of the questionnaire with ‘lavaan ’package version 0.6-3 (Rosseel, 2012) in R version 3.4.2. First, we conducted CFA step by step for all scales from the teacher questionnaire until the model show good fit. The fit of the model is considered acceptable when $CFI \geq 0.9$; $TFI \geq 0.9$, $SRMR \leq 0.08$ and $RMSEA \leq 0.06$ (Hu & Bentler, 1999). Finally, the result provides an acceptable model fit ($\chi^2 = 6914.51$, $df = 4141$, $p < 0.001$; $RMSEA = 0.04$ (0.039, 0.042); $CFI = 0.90$; $TLI = 0.90$, $SRMR = 0.05$).

4.5 Results

The purpose of the present study was to examine the relationship between teachers’ characteristics, working conditions, leadership from principals and teacher educators and teaching quality, with a particular focus on the mediating effects. A structural equation modelling (SEM) was set up accordingly. All latent constructs were identified by fixing construct variance. We constructed separate measurement models for the items in each group of factors according to our hypothesis. Based on modification indices and standardized residuals, we stepwise added the effects of teacher personal factors and school working conditions on teaching quality. Finally, we combined these models to form Model 1 (see Figure 4.2). The result of Model 1 fits the data well: $\chi^2 = 3077.07$, $df = 1415$, $p < 0.001$; $RMSEA = .05$; $CFI = .92$; $TLI = .91$;

SRMR= .08. Regression coefficients and correlations among the factors (r) of Model 1 are presented in Figure 4.2. It showed a completely standardized solution for the path analysis of student perceptions of teaching explained by teachers' self-efficacy, principal leadership, teacher educator leadership, task autonomy, and colleague support. For ease of exposition, only the structural part of the model is depicted. To facilitate interpretation, all the significant direct, indirect, as well as total effects on student perceptions of teaching are presented in Table 4.1.

Table 4.1

Standardized direct, indirect and total effects for explanatory variables on teaching practices

	Teaching practices					
	Classroom teaching strategy			Classroom management		
	Direct	Indirect	Total	Direct	Indirect	Total
Efficacy in classroom management				0.283		
Efficacy in classroom teaching	0.146					
Principal leadership					0.040	
Supervisor leadership		0.050				
Task autonomy					0.049	
Colleague support	0.132	0.025	0.157		0.066	
Percentage of explained variance				5.0		

Note: $N=419$. $\chi^2(1415)=3077.072$, $p<0.001$; $CFI=0.916$, $RMSEA=0.053$; $SRMR=0.080$. All direct effects are significant at $p<0.05$.

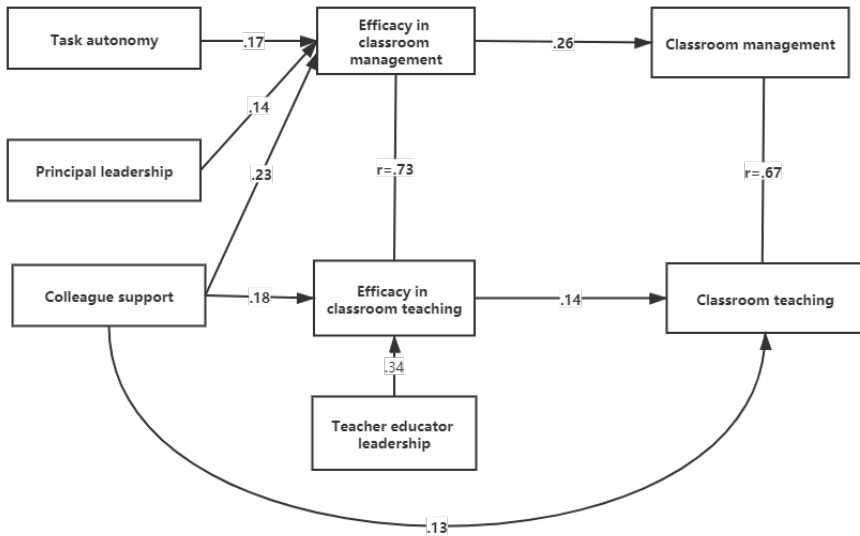


Figure 4.2

Model of student perceptions of teaching and influential factors.

4.5.1 Direct relationship between work conditions and teacher characteristics with teaching quality

Results of the final Model 1 indicates that only teachers' self-efficacy in teaching, and teachers' perceived support from colleagues directly affect student perceptions of teaching. Task autonomy, support from school leaders, as well as support from colleagues indirectly influence student perceptions of teaching.

More specifically, the results show that the student perceptions of classroom management are affected directly by self-efficacy in classroom management ($\beta=.26$, $p<0.001$). It indicates that the greater the teachers' self-efficacy in classroom management, the better the teaching quality in terms of the classroom management they have. The classroom teaching is more affected directly by the self-efficacy in classroom teaching ($\beta=.14$, $p<0.001$) and the support from their colleagues ($\beta=.13$, $p=0.004$). This indicates that the greater the teachers' self-efficacy in classroom teaching, and the more support their colleagues demonstrated, the better the teaching quality in terms of classroom management. However, for the other variables (e.g. teachers' educational level, teachers' belief in learning, teachers' learning motiva-

tion), we did not find any direct effects on student perceptions of teaching quality.

4.5.2 Mediating effects of teacher characteristics

We tried each indirect path in the model. In contrast to what we expected, the results showed that there is no significant indirect effect of influential factors on student perceptions of teaching quality via teachers' motivation. These findings indicate that even though they reported more motivational factors for their learning activities, their teaching practices are not more improved via their motivation according to students' perceptions.

We also expected that teachers' self-efficacy in teaching would partially mediate the effect of principal leadership, teacher educator leadership, teachers' beliefs in learning, support from colleagues, task autonomy on student perceptions of teaching. In accordance with what we expected, the result indicates that colleagues' support has an indirect effect on classroom teaching via efficacy in classroom teaching ($\beta=.03$, $p=0.006$). Teacher educator leadership also appears to have an indirect effect on classroom teaching via efficacy in classroom teaching ($\beta=.05$, $p=0.002$). This means that the more teachers perceived the support from colleagues and teacher educators, the more self-efficacy in teachers' classroom teaching which, in turn, leads to better teaching quality in terms of classroom management. For efficacy in classroom management, task autonomy seems to have an indirect effect on classroom management via efficacy in classroom management ($\beta=.05$, $p<0.001$). Principal leadership has an indirect effect on classroom management via efficacy in classroom management ($\beta=.04$, $p=0.012$). Support from colleagues appears to have an indirect effect on classroom management via efficacy in classroom management ($\beta=.07$, $p=0.001$). This indicates the more teachers perceived support from colleagues and school leaders, the more they felt autonomy of the task, the greater the self-efficacy classroom management, which, in turn, leads to better teaching quality in terms of classroom management. However, for the teachers' belief about learning, we did not find any indirect effects on teaching quality. It indicates that even though they are perceived more conceptions of self-directed learning, students still thought their teaching quality is not more improvement via their self-efficacy.

4.6 Discussion

In this study, we examined the relative importance of teacher psychological factors and environmental factors in explaining variation in student perceptions of teaching. We built a structural model with a sample of data 419 teachers. Our model indicated that teacher self-efficacy had a direct effect on the student perceptions of teaching. And support from colleagues had both direct and indirect effects on student perceptions of teaching. The perceived leadership from school leaders and teacher educators, task autonomy had indirect effects on the student perceptions of teaching via teachers' self-efficacy in teaching. In this section, we discuss our most important findings.

First, our findings support our assumption that teachers with a stronger belief in their own capabilities in teaching show better performance in student perceptions of teaching. Moreover, it seems that teachers' efficacy is the only variable in the model that directly relates to both subscales of student perceptions of teaching quality (classroom teaching, classroom management). This means that teachers' self-efficacy not only directly affects how they manage their classes but also influences the strategies they used in classroom teaching. Besides direct influence, teachers' self-efficacy also partially mediated the effect of perceived leadership from principal and teacher educators, teachers' beliefs regarding learning, perceived support from colleagues, task autonomy on the student perceptions of teaching. It seems that as one of the most central psychological mechanisms that affect action (Benight & Bandura, 2004), self-efficacy is a more powerful predictor for student perceptions of teaching than other influential variables in our study. The sense of self-efficacy seems to be a relevant and significant psychological factor for student perceptions of teaching in the classroom. Similarly to the research conducted by Gaertner and Brunner (2018) and Künsting, Neuber, and Lipowsky (2016), our results indicated that teachers with a strong sense of efficacy, students rated their teachers are likely to exert better teaching quality. This provides an important implication for teacher education as it demonstrates the importance of heightening teachers' self-efficacy beliefs in teaching practices.

However, according to students' perceptions, teachers' motivation for professional learning did not show the hypothesized effects on student perceptions of teaching in our structural model. These findings were unexpected in the light of previous studies

in the Western culture setting (Gan et al., 2018; Georgios Gorozidis & Papaioannou, 2014; Lam et al., 2010; Thoonen et al., 2011). One possible explanation could be explained by a cultural difference. Chinese culture places more emphasis on collectivism rather than individualism (Ho & Chiu, 1994). According to Bochner (1994), in collective societies, such as those found among Chinese teachers, the individual is more absorbed in, and attached to, the group, and people are encouraged to do what is best for the community rather than the individual. In that case, Chinese teachers may be reluctant to offer straight and negative information when they are pressed to participate in learning activities, since they are absorbed in schools.

In addition, students think that leadership from school leaders only indirectly affects teachers' management skills, but not teaching skills. One explanation for this indirect effect could be that as a managerial and political role in China, principals are required to take more responsibilities in the management of their school. As an administrator and manager, they may pay more attention to the teachers' management skills. As a consequence, school leaders may take various measures to improve teachers' confidence in their ability to manage the classroom. In a review of research into school principal leadership in mainland China, Walker and Qian (2015) also reported that the issue of classroom management was the area in which school leaders showed the greatest concern regarding new teachers' general teaching skills. School leaders may lack enough awareness to design a long-term strategy for schoolteachers' learning and development in teaching strategies as they think it is academic supervisors' responsibility.

4.7 Limitations

One limitation is that the study is conducted in Shanghai, which is one of the largest cities and the economical centre of China, it might not be similar to other Chinese cities and regions. Accordingly, the conclusion from teachers in Shanghai might not be representative of teachers in general in China.

Another limitation is that we used the student survey to evaluate teaching quality. Further studies could collect data on student performance as an alternative evaluate measure, it might be helpful for the reliability of the data and conclusion.

Moreover, the percentage of explained variance seems low, it means that the model

did not include all the relevant predictors to explain an outcome variable. Further studies could include more variables in the model. For example, the demographic characteristics of teachers and students (e.g., teacher gender). Several studies in higher education contexts indicate that female instructors are consistently rated lower than their male counterparts (Fernandez & Mateo, 1997).

Finally, our study used quantitative methodologies to explore the relationship between influential factors and student perceptions of teaching. However, since teachers' instruction is a complex behaviour and various psychological and organizational factors affect student perceptions of teaching. We advise that future studies should use qualitative methodologies (e.g. in-depth face to face-to-face interview) or mix methodologies to provide a better understanding of the influence of these factors on student perceptions of teaching.

4.8 Implications

We wish to highlight several implications for theory and practice. In terms of theory, the findings affirm the importance of teachers' self-efficacy to student perceptions of teaching quality. It not only directly affects student perceptions of teaching quality, but also indirectly affects teaching quality as an important mediator. Future research should pay more attention to the possible role of teacher self-efficacy in teaching and professional development.

Considering the importance of teachers' self-efficacy in teaching practices, in practice, if teacher educators aim to improve teachers' instruction quality, they need to discuss possible strategies for individual teachers to help each teacher to develop more efficacy and resilience in dealing with future challenges in their teaching in the classroom, and make teachers feel more confident in their teaching behaviours. Principals should reinforce their leadership and give more support and freedom to increase teachers' self-efficacy – for example, through facilitating interactions and professional dialogues between teachers to try to understand their concerns and design strategies to further improve teaching practices according to their needs. For teachers themselves, teachers with rich teaching experience should help new teachers to improve their teaching skills and strategies, building an autonomy-supportive working environment to enhance individual teachers' confidence in the teaching ability.

4.9 Concluding remarks

To conclude, our study used a model of teachers' personal and environmental factors to explain the variance in the student perceptions of teaching. We found self-efficacy seemed to be the most powerful predictor for teaching practices. Support from colleagues, task autonomy, the support from principals and teacher educators also have an effect on student perceptions of teaching via teachers' self-efficacy. However, given that the school is a complex environment and various psychological and organizational factors affect student perceptions of teaching, future research should identify more organizational conditions and psychological factors that contribute to differences in classroom teaching and whether these effects persist over time.