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Teacher interpersonal behaviour and student achievement in English as a Foreign Language classrooms in China

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Abstract We examined the relationship between English as a Foreign Language (EFL) teachers' interpersonal behaviour and students' fluency in English in secondary education in China. A total of 160 students from four classes in the southwest part of China were asked to assess their teachers' interpersonal behaviour using the Questionnaire on Teacher Interaction (QTI). This was the first time that the QTI was successfully translated and used (in EFL classrooms) in China. Cronbach's α reliability coefficients for the scales were adequate, while confirmatory factor analyses provided support for the theoretical framework behind the questionnaire. Results showed that teacher uncertainty was negatively correlated with student achievement. Furthermore, the degree of teacher cooperation with students was the only significant predictor for student achievement, but its effect disappeared when student background variables were taken into account. Results also indicated a discrepancy between students' perceptions of preferred and actual teacher interpersonal behaviour. The tolerant-authoritative profile was the most common interpersonal style based on Chinese students' perceptions.

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Introduction

Since the late 1960s and early 1970s, learning environments research has steadily grown and the learning environment has proven to be a major determinant of student learning (Soerjaningsih et al. 2001). Research in psychology has shown that the effect that teachers have on students is largely determined by students' psychological responses to what the teacher does (Doyle 1979; Shuell 1996). According to Shuell's (1996) psychological model of perceptions, what students will learn in the classroom is subject to the way in which learners perceive, interpret and process information in the instructional situation. This makes the use of student perceptions in the assessment of the learning environment and in investigating its effect on learning outcomes both valuable and necessary. Other arguments for the use of student perceptions are that they are cheaper and more efficient to gather than, for example, observational data, that student perceptions are often based on a large number of lessons, and that they are created by students taking into account many different situations, teachers and contexts (Clausen 2002; De Jong and Westerhof 2001; den Brok 2001; Fraser 1998). If student perceptions within classes are aggregated, this will result in more stable judgements and will lower the influence of personal preferences or situational factors (Kunter and Baumert 2006). Nevertheless, student perceptions have sometimes been criticised as being undifferentiated, and being influenced by factors such as teacher popularity or grading leniency (Aleamoni 1999; Greenwald 1997) or student background characteristics (Aleamoni 1999). However, recent studies show that the effects of popularity and grading leniency are probably overestimated (De Jong and Westerhof 2001; Kunter and Baumert 2006). Indeed, student perception data of teaching from well-established instruments have been successfully used in several domains, such as learning environments research (Fraser 1998), teacher effectiveness (Aleamoni 1999; den Brok et al. 2004; Kyriakides 2005) and instructional quality (De Jong and Westerhof 2001).

To assess the impact of learning environments, some educational researchers have tried to assess students' perceptions of interpersonal teacher behaviour. The present study also investigated students' perceptions of the interpersonal behaviour of their teachers and linked these perceptions to student achievement in English. The study involved the widely-used Questionnaire on Teacher Interaction (QTI; Wubbels et al. 1985). The original QTI consisted of 77 items relating to eight scales (see Theoretical Framework section) which constitute two general interpersonal dimensions: Influence (degree of teacher control); and Proximity (degree of teacher cooperation with students).

There were several reasons for conducting this study. First, while the QTI exists in many languages (Wubbels et al. 1997), it seldom has been used with Chinese secondary education students. Xin et al. (2000) translated the QTI into Chinese and surveyed 347 elementary and secondary school teachers in China. Their results showed that there were differences in interpersonal teacher behaviour between men and women, urban and rural areas, and different types of schools, and that behaviour was affected by teachers' beliefs. However, in their study, they only used the QTI for teacher self evaluation (self perceptions) and used simple translation when adapting the questionnaire. Cronbach's α coefficients in their study were between 0.60 and 0.70 for five scales (Leadership, Understanding, Uncertain, Dissatisfied, and Admonishing) and between 0.40 and 0.50 for three other scales (Helpful/Friendly, Student Freedom, and Strict), indicating some problems with the instrument and the need to further adapt it. Finally, their study did not involve checking the construct validity of the questionnaire. In this study, the QTI was translated into Chinese and then back-translated into English, and face validity was judged

against the Chinese education context. Also, the questionnaire was judged in terms of construct validity and its predictive validity on students' fluency in English.

Second, previous studies relating to the QTI were mostly conducted in secondary science, mathematics, physics or biology classroom environments. Only one previous study with the QTI dealt with English as a Foreign Language (EFL) students (den Brok et al. 2004). At the national level, the Chinese government has identified English as a necessary means for modernising the country and thus as a cornerstone of international competition (Hu 2002). English is usually introduced as a compulsory foreign language in most schools at Grade 3 in China. For almost 30 years, English language education has been considered a subject of paramount importance in China (Jin and Cortazzi 2003). At a more personal (student) level, proficiency in English is seen as a key to promotion to higher professional ranks, to securing a better job, to studying abroad, to both entering and graduating from a university, etc. As a result, there is a massive drive to improve English language teaching in the formal education system, especially at the secondary level (Ministry of Education 2000). Studies such as the present one could help in achieving this aim by providing an image of current education practices and their effects on achievement.

Theoretical framework

The Questionnaire on Teacher Interaction (QTI), which is widely used in many countries in different languages (Wubbels et al. 1997), measures secondary students' and teachers' perceptions of teacher interpersonal behaviour. It was developed in the early 1980s and evolved from Leary's (1957) Interpersonal Adjective Checklist (ICL). Leary developed his Model for Interpersonal Diagnosis of Personality that describes interpersonal behaviours along the two dimensions of Dominance–Submissiveness and Hostility–Affection. In his model, interpersonal communication is thus plotted according to how affective or dominant the participant is. Leary's model was adapted to education by creating a model for teacher behaviour (Wubbels et al. 1985), the Model for Interpersonal Teacher Behaviour (MITB), which uses the same axes as Leary's model and describes the types of interpersonal behaviours displayed by teachers (see Fig. 1). The MITB uses an Influence dimension (Dominance, D; Submission, S) to measure the degree of dominance or control of the teacher over the communication process and a Proximity dimension (Cooperation, C; Opposition, O) to measure the degree of cooperation of their teacher felt by students.

The QTI was first developed by Wubbels and his colleagues in 1985 in the authors' native language, Dutch, for use in a teacher education project at Utrecht University, The Netherlands (Wubbels et al. 1985). Its development involved four rounds of testing using different sets of items. Interviews with teachers, students, teacher educators and researchers were conducted to judge the face validity of items. Teacher interpersonal behaviour as measured with the QTI examines eight behaviour sectors, represented by scales corresponding to the behaviour sectors of the MITB: Leadership (DC), Understanding (CS), Uncertain (SO), Admonishing (OD), Helpful/Friendly (CD), Student Freedom (SC), Dissatisfied (OS) and Strict behaviour (DO) (Wubbels et al. 1985, 2006; Wubbels and Levy 1993).

An American version of the QTI was created between 1985 and 1987 by translating the set of 77 items from the Dutch version, adding several items (because several items could be translated in more than one way), and adjusting this set of items based on three rounds of testing (Wubbels and Levy 1991). Ultimately, the American version contained 64 items. This American version was initially also used in Australia (Wubbels and Levy 1993), but eventually a more economical 48-item selection was developed. Since its development, the
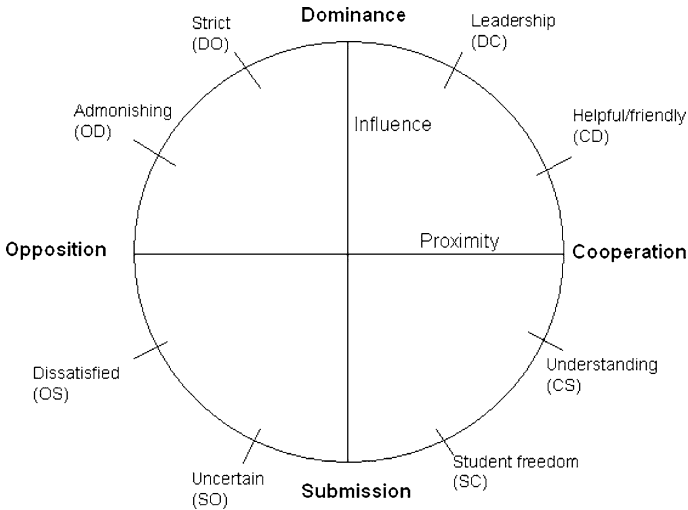
Fig. 1 The model for interpersonal teacher behaviour

QTI has been successfully translated and used in a number of countries, such as Australia (Fisher et al. 2005), Brunei (den Brok et al. 2005b; Khine 2002), Cyprus (Kyriakides 2005), India (den Brok et al. 2005a), Indonesia (Margianti 2002), Korea (Lee et al. 2003), The Netherlands (e.g. Brekelmans et al. 1990; den Brok et al. 2004), Singapore (Goh and Fraser 1998), Turkey (Telli et al. 2007), Thailand (Wei and Onsawad 2007) and the USA (Wubbels and Levy 1991, 1993), among other countries.

A special point of attention in research using the QTI in new cultural contexts or new languages is establishing its construct validity. The specific theoretical framework behind the QTI (a circular structure and two independent dimensions) allows for and warrants the use of confirmatory factor analyses (with structural equation modelling) rather than exploratory factor analyses. Although such analyses have hardly been used to see if the two dimensions have been operationalised with their intended meaning, studies employing (multilevel) confirmatory factor analyses have provided convincing evidence that a circular structure and two independent dimensions indeed lie behind the items and scales of the QTI (Kyriakides 2005; Telli et al. 2007; Wubbels and Levy 1991; Wubbels et al. 2006).

The version that was used in this study as the basis for translation and adaptation was the 48-item Australian version because we believed this was most suitable for the Chinese context given the relatively short lesson periods (45 min with a 15-min break before the next period starts). Also, because Chinese teachers are relatively unfamiliar with these types of evaluation (research) instruments, we preferred a shorter version over a longer (64-item) version to limit distortion of classroom processes.

Most of the studies using the QTI have described students' perceptions of teacher behaviour in terms of the two interpersonal dimensions.[1] These studies show an interesting

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[1] Interpersonal dimension scores (e.g. Influence and Proximity) are to be preferred over the eight inter-personal sector (or scale) scores and for four quadrant scores because they are theoretically (and empirically) independent, because they are more reliable and because they are less subject to (cross-cultural) validity problems (e.g. den Brok et al. 2006).

pattern. First, in all countries, positive dimension scores[2] are reported, indicating that students perceive more dominance than submissiveness and more cooperation than opposition in their classes. Second, in all countries, students report twice (or more than twice) the amount of Proximity compared to the amount of Influence, meaning that teachers are perceived as more cooperative than they are perceived as dominant. Of course, interesting differences between studies and countries can be noted (Telli et al. 2007; Wubbels et al. 2006), with Dutch teachers being perceived lowest on both dimensions, Singaporean teachers being perceived highest on Proximity and Bruneian teachers being perceived highest on the Influence dimension.

Research on students' perceptions of their ideal teachers also has been conducted in various countries such as The Netherlands, the USA, Australia, Thailand, Norway, UK (Wales) and Poland (Sztejnberg et al. 2004; van Oord and den Brok 2004; Wei and Onsawad 2007; Wubbels and Levy 1991). Students in all seven countries seem to have similar perceptions of their best teachers. These teachers can be described as strong leaders, friendly and understanding, but not uncertain, admonishing or dissatisfied. The best interpersonal teacher provides some freedom to students and can sometimes be strict. Interestingly, students in The Netherlands perceived their best teachers as displaying a little less leadership, helpful/friendly, understanding and strict behaviour than students from any other country. Students from Thailand agreed that the ideal teacher should provide more freedom to the students than students from any other country.

Many studies have shown that students' perceptions of teacher interpersonal behaviours are strongly related to student achievement, as well as to students' subject-related attitudes (den Brok et al. 2004; den Brok et al. 2005a, b; Fisher et al. 2005; Kyriakides 2005; Wubbels 1993; Wubbels et al. 2006). Wubbels (1993), for example, conducted a study in Australia and The Netherlands into the relationship between teacher interpersonal behaviour and student achievement (measured with a standardised test). He found that students' perceptions of teacher interpersonal behaviour account for a large amount of the differences in achievement between classes of the same ability level. The perceptions accounted for 70% of the variability in student achievement. Den Brok et al. (2004) investigated the effectiveness of secondary education teachers' interpersonal behaviour by analysing data from two samples: a study of 45 physics teachers and their third-year classes; and a study on 32 EFL teachers and their third-year classes. The results showed important associations between interpersonal teacher behaviour and student outcomes (using standardised test), with 14.7–67% of the class-level variance explained for the Physics sample and 3.5–50% of the class-level variance explained in the EFL sample. These amounts of variances (and the positive associations) remained even after including prior achievement and motivation and a variety of student, class and school characteristics and taking into account the non-random sampling of respondents (by employing multilevel analysis methods).

When report card grades have been used as outcome measures, relationships with interpersonal behaviour were inconclusive (Levy et al. 1992). No relationship between student perceptions of teacher Proximity and Influence and their report card grades was found in these studies.

Only a small number of studies have investigated the associations of interpersonal teacher behaviour with student outcomes, taking into account other perspectives on teaching

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[2] Dimension scores can range between −3 and +3, with 0 representing equal amounts of Dominance and Submissiveness, Cooperation and Opposition, respectively. Scores between 0 and 0.5 are moderately positive, scores between 0.5 and 1 can be regarded as positive, and scores above 1 as very positive.

(e.g. other teacher behaviour variables). Most of these were undertaken in Australia (Evans 1998; Fisher et al. 2005; Henderson 1995; Rawnsley 1997), one in Singapore (Goh 1994), one study in The Netherlands (Van Amelsvoort 1999) and one in Thailand (Wei and Onsawad 2007). Some studies have found similar amounts of variance explained by interpersonal teacher behaviour as compared with other teacher behaviours with respect to examination scores (Goh 1994; Henderson 1995). One study of outcomes on a practical test revealed a larger amount of variance explained by interpersonal teacher behaviour (Henderson 1995), whereas another study found higher amounts of variance explained by other teaching variables (Rawnsley 1997). The amounts of variance shared by interpersonal teacher behaviour and other teacher behaviours were rather low (<5%) in all of the studies mentioned. This means that interpersonal teacher behaviour has a separate, distinctive relationship with student outcomes.

Using cluster analyses, eight different types of interpersonal styles have been identified with the QTI in Dutch and American secondary education samples (Brekelmans 1989; Brekelmans et al. 1993a). These eight styles have been (largely) confirmed for Australian (Rickards et al. 2005) and Turkish (Telli et al. 2007) samples as well. The styles were labelled as Directive, Authoritative, Tolerant-Authoritative, Tolerant, Uncertain-Tolerant, Uncertain-Aggressive, Drudging, and Repressive (Fig. 2).

The Authoritative, the Tolerant-Authoritative and the Tolerant type are patterns in which students perceive their teachers as relatively high on the Proximity dimension, with the Tolerant type lowest on the Influence dimension. Less co-operative than the three previous types are the Directive, the Uncertain-Tolerant and the Drudging types, with the Uncertain-Tolerant type lowest on the Dominance dimension. The least co-operative patterns of interpersonal relationships have been indicated as Repressive and Uncertain-Aggressive. In Repressive type classes, teachers are the most dominant of all eight types. The average amounts of Influence and Proximity for each of the eight types is presented in Fig. 3.

The eight interpersonal types have also been linked to student outcomes (Brekelmans et al. 1993b). Repressive teachers, followed by Tolerant and Directive teachers, realised
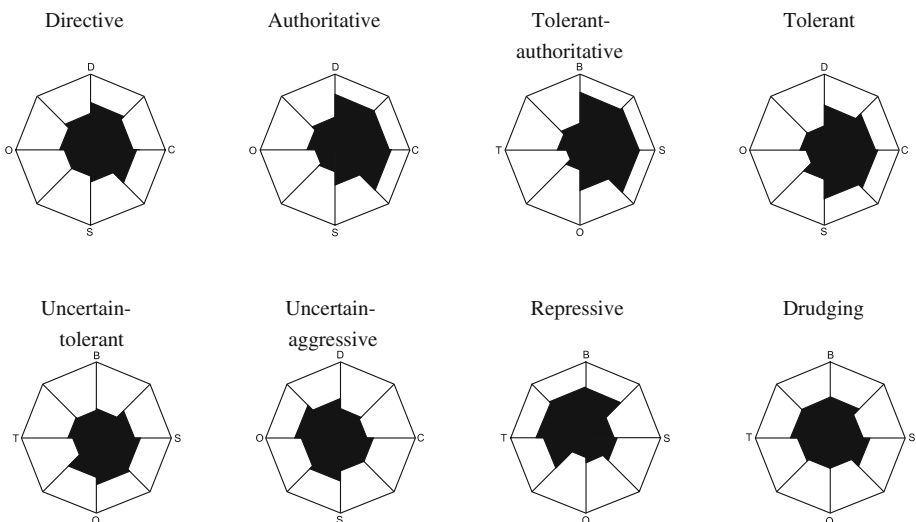

Fig. 2 Graphic representations of the eight types of patterns of interpersonal relationships
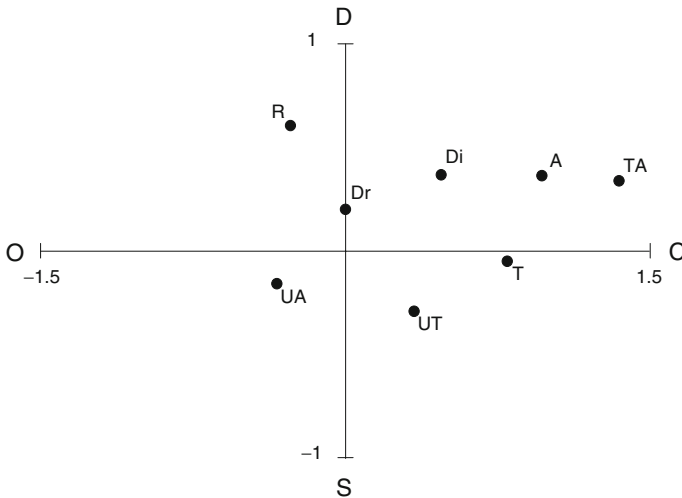
Fig. 3 Average amounts of Influence and Proximity for the eight types of patterns of interpersonal relationships. *A* authoritative, *Di* directive, *Dr* drudging, *T* tolerant, *R* repressive, *TA* tolerant-authoritative, *UA* uncertain-aggressive, *UT* uncertain-tolerant

the highest achievement. Lowest achievement was found in classes of Uncertain-Tolerant and Uncertain-Aggressive teachers. Highest motivation has been found in classes of Authoritative, Tolerant-Authoritative and Directive teachers, while lowest motivation occurred in classes of Drudging and Uncertain-Aggressive teachers. The pattern found for the Tolerant-Authoritative teachers approximates the image of the 'best' or 'ideal' teacher.

The Chinese education context

China's education system is composed of the four components of basic education, occupational/polytechnic education, common higher education and adult education. Basic education comprises pre-school education and primary (6 years) and junior (3 years) and senior (3 years) middle schooling. Primary school students study core subjects such as Chinese, mathematics, history, geography, science, etc. Children usually enter primary school at seven years of age. The two semesters of the school year consists of 9.5 months and normally begin on September 1 and March 1, with a summer vacation in July and August and a winter vacation in January and February.

A school week (in primary education) is typically divided into 24–27 lessons of 45 min each. Junior middle school is really a continuation of the primary system, with students studying the same core subjects at higher levels. Each school year usually has two semesters, totalling nine months. The academic curriculum consists of Chinese language, mathematics, physics, chemistry, geology, foreign language, history, geography, politics, physiology, music, fine arts and physical education.

Song and his colleagues (Song et al. 2005) have commented that China has always been a country that emphasises teacher dignity and student respect for teachers. It has always been expected that teachers are stern in front of students and students obey the teacher without discussion. The teacher is seen as an honourable person who is treated with solemnity and awe by the students.

Research questions

The present study examined the relationship between teacher interpersonal behaviour and student achievement in the Chinese context. The researchers also tried to identify perceptions of 'ideal' Chinese teachers and how such an ideal compares with the 'actual' teacher present in the classroom. More specifically, the following research questions were addressed:

1. What relationships exist between Chinese students' perceptions of their teachers' interpersonal behaviour and their achievement in EFL?

    a. What correlations exist between teacher interpersonal behaviour (in terms of the 8 sectors and 2 dimensions of the MITB) and students' English achievement?
    b. To what degree do teacher Proximity and Influence predict students' English achievement, when corrected for covariates (class, gender, age)?

2. What are the characteristics of a Chinese 'ideal' teacher compared to those of a Chinese 'actual' teacher?
3. What interpersonal profiles can be found in Chinese students' ideal and actual perceptions of their teachers?

Methodology

Sample

A sample of 160 Grade 8 students was chosen from four secondary school classes in the southwest part of China. The school from which we collected data was a medium-sized middle school (Grade 7–Grade 12) in a capital city in the southwest part of China. The school was selected based on convenience sampling. The school had 2,030 students who all took English as a compulsory course each year. The average age of students was 14.2 years. All students had studied English for 6 years. There were 81 male (51%) and 79 female students (49%).

The school seems typical for China in terms of its size and gender ratio. Liang (2001) reports the 1998 average secondary school size in China to be 1,810 students and the percentage of female enrolment in secondary education to be 45.7%. In his World Bank report, he also concludes that many educational statistics are not available for China. All students in the school and the study are Chinese nationals and speak Chinese as their primary (home) language. No child was identified with a history of oral-language or cognitive disabilities. Therefore, the results of the current study might apply to a larger population in schools of China, although precise information on this aspect cannot be provided.

Instrumentation

The Questionnaire on Teacher Interaction (QTI; Wubbels and Levy 1991) was used for assessment of students' perceptions of their EFL teachers' interpersonal behaviour. The QTI was translated into Chinese by the first author and back-translated into English by the third author. Face validity of the questionnaires was checked by three more experts, who indicated the need for some minor modifications (e.g. the item "This teacher thinks we

cheat"). Because one student asked if 'cheat' here only referred to the examination, we used different wording to clarify that cheating also referred to other classroom behaviour, such as cheating with assignments. Before administering the (Chinese) QTI, five students were asked for feedback about the wording of the questionnaire. All students felt that the wording in the questionnaire was easy to comprehend.

After administering the questionnaire, data were entered into SPSS for Windows. Cronbach's α coefficient was computed for each QTI scale as a measure of internal consistency at the individual level and at the class level. Table 1 shows α reliability coefficients for each scale in the Chinese version of the QTI (actual perceptions). As can be seen in Table 1, Uncertain and Admonishing had coefficients below 0.70 at the class level, indicating a need for further improvement in the future. Variance analyses showed that 11–32% of all differences in perceptions between students could be attributed to class membership, an exception being Uncertain. This indicated that the Chinese version of the QTI is able to distinguish between classes/teachers.

Using MPlus (Muthén and Muthén 1999) single-level confirmatory factor analyses were conducted for the scales of the QTI to assess construct validity. A model hypothesising two independent dimensions and the exact scale positions as displayed in Fig. 1 showed weak model fit ($\chi^2 = 210.23$ with $df = 26$ ($p = 0.00$); CFI = 0.59; TLI = 0.56; RMSEA = 0.21; SRMR = 0.20). However, a less restrictive model allowing scales to shift somewhat over the interpersonal circle, but still hypothesising two independent dimensions, showed reasonable fit ($\chi^2 = 22.21$ with $df = 13$ ($p = 0.00$); CFI = 0.98; TLI = 0.96; RMSEA = 0.07; SRMR = 0.06). Factor loadings (Table 2) suggested that the two factors could be interpreted as an Influence and a Proximity dimension. However, the Student Freedom scale seemed to have a higher factor loading on the Influence dimension than expected and the Uncertain scale had a higher factor loading than expected on the Proximity dimension, indicating some validity problems.

These (minor) validity problems were also reflected in a weak but significant correlation estimated with Mplus between the two dimensions (having a value of 0.10).

Student achievement was measured by the Eighth Grade English Test devised by the Municipal Education and Science Research Institute in the provincial capital city. The

Table 1 Reliability and proportion of variance at the class level for each QTI scale

Scale	α Reliability		ANOVA η^2
	Individual ($n = 160$)	Class mean ($n = 4$)	Individual ($n = 160$)
DC Leadership	0.65	0.98	0.32**
CD Helpful/friendly	0.79	0.95	0.28**
CS Understanding	0.69	0.98	0.19**
SC Student freedom	0.42	0.81	0.13**
SO Uncertain	0.57	0.60	0.04
OS Dissatisfied	0.79	0.92	0.11**
OD Admonishing	0.61	0.66	0.11**
DO Strict	0.57	0.82	0.12**

The η^2 (the ratio of 'between' to 'total' sums of squares) represents the proportion of variance explained by class membership

** $p < 0.01$

Table 2 Factor loadings of the scales of the QTI (estimated with Mplus)

Scales	Factor loadings	
	Factor 1	Factor 2
DC Leadership	0.92	0.38
CD Helpful/friendly	0.38	0.92
CS Understanding	0.12	0.92
SC Student freedom	0.34	0.14
SO Uncertain	−0.92	0.33
OS Dissatisfied	−0.38	−0.70
OD Admonishing	0.38	−0.92
DO Strict	0.92	−0.38

eight-page standardised test consisted of listening, reading and writing. Students had 2 hours to finish the test. The reported reliability (Cronbach's α) was 0.95.

Analyses

The Statistical Package for Social Sciences (SPSS, version 14.0) was used to perform simple and multiple correlation analyses, and multiple regression analyses (enter method) to examine the relationship between teacher interpersonal behaviour and student achievement. Given the hierarchical nature of the data (students were sampled within classes), multilevel analyses of variance would have been preferable for analysing the data. However, the small sample, particularly the small number of classes participating, did not allow for such analyses. Instead, regular regression analyses were used with class membership included as a covariate. In a first regression analysis, the two interpersonal dimensions were the independent variables, achievement was the dependent variable and class membership was a covariate. In a second regression analysis, the two interpersonal dimensions, student gender and age, were independent variables, achievement was the dependent variable and again class membership was a covariate. Collinearity statistics (Variance Inflator Factor or VIF, Tolerance and Condition Indices) indicated that the use of regression analysis was adequate: VIF was below 2 for all variables, Tolerance was below 1 and Condition Indices were below 15 (higher values on these indices suggest multicollinearity). A paired t-test was conducted to compare preferred and actual scale and dimension scores. Interpersonal profiles were determined by comparing the scale scores of students to the eight profiles distinguished by Brekelmans (1989) and allocating the profile nearest to the scale pattern. Moreover, scale scores were also used to compute dimension scores.[3] Obviously, the small sample limits the statistical power of the study and results should be regarded as first indications of the Chinese situation and interpreted with care.

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[3] Dimension scores were computed as follows (the numbers before the scale labels represent the factor loadings): Influence = 0.92DC + 0.38CD − 0.38CS − 0.92SC − 0.92SO − 0.38OS + 0.38OD + 0.92D0; Proximity = 0.38DC + 0.92CD + 0.92CS + 0.38SC − 0.38SO − 0.92OS − 0.92OD − 0.38DO. These scores range between about −3 and +3.

Results

Associations between teacher interpersonal behaviour and student achievement

In order to establish associations between students' perceptions of their teachers' interpersonal behaviours and their achievement, first simple correlation analyses were performed. The results are shown in Table 3. Among all correlation coefficients, only the correlation between Uncertain and student achievement was significant at the 0.01 level. This means that the more a teacher was perceived as uncertain, the lower was the achievement score of a student. All other coefficients were statistically nonsignificant.

Next, we conducted a regression analysis in which student achievement was the criterion variable and the two dimensions and class membership were the predictors. The results of this analysis in Table 4 indicate that the model explained relatively low amounts of variance, but revealed a significant positive association between Proximity and achievement, taking into account the amount of perceived Influence and class membership.

In a second regression analysis (Table 5), when student gender and age were added to the models, the significant effect of Proximity on student achievement disappeared ($p = 0.032$). However, in this analysis, student gender did emerge as a significant variable, with girls showing higher achievement scores than boys. Apparently, the effect of Proximity overlaps to some degree with that of student gender.

Characteristics of a Chinese 'ideal' teacher compared to those of a Chinese 'actual' teacher

To answer this question, paired sample t-tests were used to compare students' perceptions of actual teacher interpersonal behaviour and ideal teacher interpersonal behaviour. The results are shown in Table 6. Chinese students had higher scores for ideal than actual teacher behaviour for Leadership, Understanding, Helpful/Friendly and Student Freedom, but lower scores for Admonishing, Dissatisfied and Strict. The mean for ideal Uncertain behaviour almost equalled that for actual Uncertain behaviour, with this being the only scale for which differences were not significantly different. All other differences between actual and ideal interpersonal teacher behaviour were significant at the 0.01 level.

Table 3 Simple correlations of QTI scales and dimensions with student achievement

Scale or dimension	Correlation with student achievement
DC Leadership	−0.06
CD Helpful/friendly	−0.03
CS Understanding	0.03
SC Student freedom	0.13
SO Uncertain	−0.27**
OS Dissatisfied	−0.15
OD Admonishing	0.06
DO Strict	−0.12
DS Influence	0.01
CO Proximity	0.07

** $p < 0.01$

Table 4 Multiple regression analysis with student achievement as criterion and two dimensions and class as predictors

Variable	b	$SE\,(b)$	R	R^2	SE_{est}	β
(Constant)	66.29	6.33				
DS	−0.20	4.96				−0.00
CO	7.50	3.32				0.20*
Class	1.87	1.45	0.18	0.03	18.27	0.12

Adjusted $R^2 = 0.02$

* $p < 0.025$

Table 5 Multiple regression analysis with student achievement as criterion and two dimensions, student gender and age and class as predictors

Variable	b	$SE\,(b)$	R	R^2	SE_{est}	β
(Constant)	30.32	48.01				
DS	−0.12	4.83				−0.00
CO	6.94	3.21				0.18
Gender	10.53	2.87				0.29*
Age	0.12	0.28				0.03
Class	1.99	1.41	0.34	0.11	17.62	0.16

Adjusted $R^2 = 0.08$

* $p < 0.025$

Table 6 Comparison between student perceptions of actual and ideal interpersonal teacher behaviour (paired t-test)

Scale or dimension	Actual		Ideal		t	p
	M	SD	M	SD		
DC Leadership	0.74	0.16	0.87	0.11	−11.45	0.00
CD Helpful/friendly	0.65	0.23	0.86	0.13	−11.83	0.00
CS Understanding	0.83	0.16	0.95	0.07	−10.77	0.00
SC Student freedom	0.45	0.15	0.56	0.16	−9.40	0.00
SO Uncertain	0.19	0.15	0.19	0.17	−0.27	0.79
OS Dissatisfied	0.24	0.21	0.13	0.17	8.10	0.00
OD Admonishing	0.35	0.17	0.23	0.12	10.13	0.00
DO Strict	0.65	0.17	0.59	0.16	5.53	0.00
DS Influence	0.67	0.32	0.65	0.33	0.79	0.43
CO Proximity	0.95	0.64	1.59	0.37	−13.41	0.00

Interpersonal profiles

In Table 7, student ideal and actual perceptions of their teachers' interpersonal behaviour are distributed in terms of the interpersonal profile that they resembled best, in terms of both absolute and relative frequency. For both actual and ideal perceptions, the Tolerant-Authoritative profile appeared to be the most common style. For actual teacher

Table 7 Frequency of interpersonal teacher profiles for actual and ideal student perceptions

Teacher profile	Actual interpersonal styles		Ideal interpersonal styles	
	f	%	f	%
Directive	22	13.8	2	1.3
Authoritative	44	27.5	13	8.1
Tolerant-authoritative	70	43.8	141	88.1
Tolerant	None	None	3	1.9
Uncertain-tolerant	None	None	None	None
Uncertain-aggressive	5	3.1	None	None
Repressive	15	9.4	None	None
Drudging	3	1.9	1	0.6
Not able to classify	1	0.6	None	None
Total	160	100	160	100

interpersonal behaviour, 70 students (43.8%) considered that their teacher was Tolerant-Authoritative whereas, for ideal interpersonal teacher behaviour, 141 students (88.1%) would prefer their teacher to be that way. The next most common types were the Authoritative and Directive profiles. Tolerant and Uncertain-Tolerant profiles were not found in the sample.

Discussion

Before discussing the findings of the present study, it is important to acknowledge that the small sample used in the present study only allows some preliminary conclusions with respect to teacher–student interpersonal relations in the Chinese context. As a result of the small sample, most of the analyses could not be conducted at the class (aggregated) level and the statistical power was limited for establishing associations between variables. Moreover, it remains unclear whether results can be generalised to Chinese secondary education as a whole.

The present study was the first to use the QTI in the Chinese context with students assessing their teachers. While most scales appeared reliable and only minor discrepancies were found with respect to construct validity, our study indicates a need for further improvement of the QTI for the Chinese context, particularly with respect to the Student Freedom and Uncertain scales. Apparently, different items should be constructed to assess Chinese teachers' Uncertain or providing Student Freedom behaviours. Further improvement of the QTI could involve the use of more qualitative data sources, such as interviews with teachers and students in order to generate new items or assess whether translated items indeed reflect the common or typical behaviours of Chinese teachers in the classroom. Obviously, the quality of the Chinese QTI should also be tested with a larger data set involving multiple schools from different cities or regions.

As far as the first research question is concerned and based on the data obtained, teacher Uncertain behaviour was negatively and significantly related to student achievement at 0.01 level. All other interpersonal behaviours (seven scales) and student achievement were not significantly correlated. Regression analyses, taking into account other covariates, also

indicated no or small effects of the interpersonal dimensions on student achievement. This is contradictory to previous studies with the QTI, which revealed quite strong associations both in science subjects and in EFL. When Wubbels and Brekelmans (1998; see also Wubbels et al. 2006) reviewed many studies, they found that, whereas Leadership, Helpful/Friendly and Understanding behaviours were positively related to student outcomes, Uncertain, Dissatisfied and Admonishing behaviours were negatively related to outcomes. Possible explanations for the present findings might be that participants were not used to this type of study, the relatively small sample involved (which was also based on voluntary participation, thus limiting the variance in behaviour) and the (minor) measurement problems reported in the instrumentation section. Moreover, the finding that the effect of Proximity disappeared after including student gender and age in the analyses might be related to gender and age differences in student perceptions. Research suggests that girls have higher Proximity perceptions than do boys, with younger students perceiving more Proximity than older students (Wubbels et al. 2006; Wubbels and Levy 1993).

With respect to the second research question, Chinese students reported higher scores for ideal teacher behaviour than for actual behaviour for Leadership, Understanding, Helpful/Friendly and Student Freedom and lower scores for Admonishing, Dissatisfied and Strict. These finding suggest that Chinese students preferred a more positive classroom environment than was perceived as being actually present. This is consistent with findings from Wubbels et al. (2006). The analyses also indicate that, in the Chinese context, students agreed that an ideal English teacher should be a strong leader, understanding and helpful/friendly, and give some freedom to students. The ideal teacher should not be admonishing, dissatisfied and strict. This is in accordance with findings on ideal teacher–student interpersonal behaviour in other countries (e.g. Wubbels 1993). Furthermore, as for the two dimensions, Influence did not show a significant difference. This might suggest that students were satisfied with the current amount of dominance.

The mean Influence (DS) score of 0.67 (SD 0.32) was larger than the mean of Singapore of 0.56 (SD 0.22) or the Australian mean of 0.55 (SD 0.31), but smaller than the mean of Brunei (e.g. den Brok et al. 2006). This suggests that the degree of dominance or control of the teachers over the communication process in China was higher than in Singapore and Australia, but lower than that in Brunei. In addition, this study's Proximity (CO) mean of 0.66 (SD 0.48) was smaller than that of all three other countries (Singapore, Brunei and Australia), which indicates that the degree of cooperation of teachers in China was lower than that in the other countries. This study's DS and CO mean are both higher than those of India (den Brok et al. 2005a), with values of 0.51 (SD 0.16) and 0.55 (SD 0.25). Compared to India, English teachers in China were both more dominant in their communication process and more cooperative with their students. This study's Leadership, Helpful/Friendly, Understanding, Admonishing and Strict behaviours were all more frequent than in Korea, but less frequent with respect to other behaviours (Kim et al. 2000).

Tolerant-Authoritative was the major interpersonal style of Chinese English teachers perceived by Grade 8 students (43.8%). The second most common interpersonal type perceived by students was Authoritative (27.5%), followed by the Directive (13.8%) type. These findings are very similar to those of Rickards et al. (2005) with an Australian sample. In their study, the Tolerant-Authoritative profile was found in 33.9% of cases, the Authoritative profile in 37.5% of cases and the Directive profile in 15.5% of cases. However, these findings are different from those reported by Brekelmans et al. (1993a) for a Dutch sample indicating more Tolerant, Uncertain-Tolerant and Uncertain-Aggressive teachers, which were rarely found in China or Australia.

There were some limitations of this study and thus further work is needed. The sample size for this study was small, especially in terms of the number of classes, thus limiting statistical power. The participants were all from one secondary school in a provincial capital city in the southwest part of China. Students' socioeconomic status was just below middle-class in the city, and could be considered low compared with other big cities like Beijing and Shanghai. Future studies could benefit from a larger sample size and selecting participants from other parts of the country. Future studies could include different types of analyses (e.g. multilevel analysis or structural equation modelling), more outcome variables (such as student attitudes, report card grades or behavioural outcomes) and more covariates (student, teacher or class and school background variables). Another limitation of the study was its restriction to teacher–student interpersonal behaviour. Despite the importance of this element of teaching, effectiveness research has suggested the importance of other teaching and classroom variables in explaining student achievement, such as time-on-task, instructional strategies or the stimulation of metacognitive learning (Creemers and Kyriakides 2006; Kyriakides 2005; Teddlie and Reynolds 2000). Moreover, effectiveness research has also shown that classroom observations can help when studying these variables because they provide other and additional data compared with student perception questionnaires (see also Kunter and Baumert 2006). Qualitative data might also be helpful for understanding and explaining students' and teachers' perceptions of teacher–student interpersonal behaviour in the Chinese context.

The findings presented in this article could have implications for Chinese teachers. Teachers could use the outcomes of this study to improve their interpersonal behaviour based on students' perceptions, for example by comparing their own classroom outcomes to the averages reported in the present study, by comparing their own perceptions to those of their students, or by comparing differences between perceptions of preferred and actual behaviour. Other researchers have reported how teachers have used assessments of their students' perceptions of their actual and preferred classroom environment as a basis for identification and discussion of actual-preferred discrepancies, followed by a systematic attempt to improve classrooms (Fraser and Fisher 1986; Thorp et al. 1994; Yarrow et al. 1997). As stated earlier, Chinese teachers are expected to be stern in front of students and students are expected to show absolute respect to their teachers. The learning environment could be greatly improved if Chinese teachers could show more helpful/friendly behaviour and less admonishing behaviour.

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