A cross-cultural comparison of teacher-student relationship quality in Chinese and Italian teachers and students

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ARTICLE INFO

ABSTRACT

Studies comparing teacher-student relationships between Eastern and Western countries are relatively rare. This study compared the affective qualities of teacher-student relationships between Eastern (i.e., China) and Western (i.e., Italy) countries to explore the measurement invariance, latent mean differences, and cultural differences in reporters' (teachers and students) agreement levels. An Italian sample of 31 teachers and 1647 students (46.9% girls; ages 9–14 years) and a Chinese sample of 28 teachers and 1474 students (44% girls; ages 9–14 years) reported on their perceptions of closeness and conflict in the teacher-student relationship. Measures of both student-perceived and teacher-perceived relationships achieved (partial) scalar invariance between the two cultures in the full sample, elementary school subsamples, and junior high school subsamples. Compared to their Chinese peers, the Italian junior high school students reported lower levels of conflict with their teachers, but there was no difference in closeness level. In addition, there was no difference in reporters' agreement across China and Italy in the full sample and in the junior high school subsample, whereas the Italian reporters' agreement on conflict was higher in the elementary school subsample.

1. Introduction

School is an important context for the development of children and adolescents (Baker et al., 2003, 2008; Prino et al., 2019) and several studies have suggested that positive student-teacher relationships contribute to children's school adjustment and their successful academic outcomes (Baker et al., 2008; Longobardi, Badenes-Ribera, et al., 2019; Longobardi, Settanni, et al., 2019; Roorda et al., 2017, 2020). However, the current literature has focused mainly on Western countries with few studies having examined the quality of teacher-student relationships from a cross-cultural perspective. Nevertheless, culture can influence the way relationships are expressed and experienced between individuals and, therefore, there may be culturally based variations in the way teachers and students perceive the quality of the teacher-student relationship. The aim of our study was to examine the issue from this perspective by comparing the perceptions of students and teachers on their relationships in the two countries of Italy (a Western country traditionally associated with an individualistic culture) and China (an Eastern country with a collectivist culture). Specifically, our study aimed to examine the cross-cultural measurement invariance of the scales measuring teacher-student relationship to compare the mean differences and to explore the degree of reporters' agreement between students and teachers in these two countries in terms of evaluating the quality of their mutual relationships.

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1.1. The teacher-student relationship quality and children's psychological development

Over the past 20 years, a considerable amount of literature has shown that the quality of the teacher-student relationship can be a factor that influences children's adaptations to the school context and associated developmental and educational outcomes (Baker et al., 2008; Hughes, 2012; Hughes et al., 2001; Longobardi, Settanni, Lin, & Fabris, 2020; Pianta et al., 2003; Verschueren et al., 2012). A positive teacher-student relationship, which is characterized by closeness, support, and affection, has been associated with better development outcomes in students, such as more prosocial behaviors and better relationships with peers (Hughes et al., 2001; Longobardi, Settanni, Lin, & Fabris, 2020; Prino et al., 2016), higher psychological well-being (Lin et al., 2022; Longobardi et al., 2016; Longobardi, Badenes-Ribera, et al., 2019; Longobardi, Settanni, et al., 2019), more positive attitudes toward school, and better academic performance (Longobardi, Settanni, Lin, & Fabris, 2020; Roorda et al., 2017). In contrast, a conflictual relationship with the teacher, characterized by a lack of rapport, tension, and negativity, has been associated with higher levels of behavioral disturbance (Baker et al., 2008; Ewe, 2019; Zee et al., 2020; Zee & Roorda, 2018), such as aggression and bullying (Longobardi et al., 2016, Longobardi, Settanni, Lin, & Fabris, 2020; Longobardi, Badenes-Ribera, et al., 2019; Longobardi, Settanni, et al., 2019), as well as with poor academic outcomes (Marengo et al., 2018).

Attachment theory (Bowlby, 1980, 1982) provides an important theoretical rationale for the study of the teacher-student relationship (McGrath & van Bergen, 2015; Pianta et al., 2003; Sabol & Pianta, 2012; Spilt et al., 2012). According to this theory, children are dependent on and become attached to the care and protection from their relationship with their primary caregivers, in particular their parents, which provides them with a secure base from which to explore their surrounding environment. The quality of the relational experience with the caregiver determines the nature of the mental representations of self and others internalized by the child, as well as the ability to develop positive and nurturing bonds. According to some authors (e.g., Verschueren et al., 2012; Verschueren & Koomen, 2012), the teacher-student relationship should not be considered a "full-fledged" attachment bond because it is not exclusive and long-lasting compared to the ties children establish with their parents. In addition, teachers have a primarily instructive role in children's lives. As such, their care behaviors are not as extensive as those provided by parents who obviously have a more significant emotional investment in their children than teachers. However, several authors have also acknowledged that the teacher-student relationship contains an "attachment component" and that teachers can serve as contemporary attachment figures (Pianta et al., 2003; Quaglia et al., 2013; Verschueren & Koomen, 2012). In this sense, a child can also utilize the teacher as a secure base and, in a close relationship, feel supported in exploring the learning environment (Pianta et al., 2003). In this way, a positive relationship with the teacher can establish a relational context that supports the student in the processes of learning and adapting in the classroom (Hughes, 2012; Prino et al., 2019). In addition, the teacher can offer a relationship model that the child can internalize and replicate with others, such as classmates (Longobardi, Settanni, Lin, & Fabris, 2020; Wentzel, 2002). However, many of the studies on teacher-student relationship were separately conducted in Eastern and Western countries. It is important to simultaneously study the quality of the teacher-student relationship from a cross-cultural perspective considering that cultural norms and values can influence how people express themselves and develop interpersonal relationships (Aukrust et al., 2003; Chen & French, 2008; Chen & Tse, 2008; Oyserman et al., 2002; Oyserman & Lee, 2008).

1.2. Cross-cultural research on student-teacher relationship quality

Some evidence suggests that attachment relationships develop differently between Eastern and Western cultures (Rothbaum et al., 2000). For example, mothers in Eastern countries seem to foster social harmony and interdependence in their children, whereas American mothers tend to encourage autonomy, individuality, and independence in their children (Dennis et al., 2002; Rothbaum et al., 2000) and seem to maintain less intimacy in their relationships with them (Dennis et al., 2002; French et al., 2001). Adolescents in Eastern countries have been found to be more connected to their families than adolescents in Western countries (Dwairy & Achoui, 2010; Dwairy et al., 2006) and American adolescents tend to report more conflictual relationships with their families than their Eastern counterparts (French et al., 2001). If culture can shape child-family relationships, these influences may extend to the student-teacher relationship, which represents a significant proportion of the relationships between students and adults outside of their family units. With respect to this view, developmental systems theory (Pianta et al., 2003) argues that the teacher-student relationship is embedded in a larger developmental system and that external factors (e.g., cultural norms and values) can influence this relationship. Cultures can prescribe timetables for expectations about students' performance and can affect the organization of schools and of disciplinary and behavioral codes and therefore can influence school climates and the relationships between the teachers and the students. For example, in countries with more hierarchy and less gender equality, the teacher may be given more authority and be more obligated to maintain discipline in the school (Chiu et al., 2016; Chiu & Chow, 2011; Hofstede, 1986). In cultures that prioritize individualism and independence, more individualized learning behaviors are encouraged (Raufelder et al., 2017) and education is viewed as a way to enhance one's economic worth and self-esteem through the acquisition of skills and competencies (Hofstede, 1986). In contrast, in collectivist cultures, education is seen as a way to elevate one's social status, with group harmony (and thus relationships within the school environment) playing a stronger role and cooperative group work among students being more encouraged (Hofstede, 1986; Raufelder et al., 2017). This evokes an interest on the part of researchers in studying the quality of the teacher student relationship from a cross-cultural perspective. In this line of inquiry, a macro-cultural comparison could be proposed using Hofstede et al.'s (2010) distinctions of individualist and collectivist cultures. These two culture types vary in the value they attribute to the degree of interpersonal interdependence, for example, with collectivist cultures higher in this dimension, and thus exhibiting a tendency to preserve social harmony. In contrast, individualistic cultures place more emphasis on the well-being of the individual and tend to show more distance and detachment from the group (Hofstede et al., 2010; Triandis, 2018). These differences also seem to be reflected in the

educational philosophy that characterizes school systems in Western countries (typically considered as individualistic) and in Eastern countries (typically considered as collectivistic).

In Eastern countries, particularly China, schooling is associated with Confucian philosophy, which views education as a means to achieve social harmony and propagates that a good education must be achieved through hard work (Cortina et al., 2017; Nisbett, 2004). Therefore, schools in Eastern countries tend to demand obedience to authority, promote pragmatically oriented education, emphasize rigor in the learning process, encourage strong individual competition among students, inspire them with the desire to prove their abilities by outperforming others, and propose exam-oriented teaching much more than schools in Western countries (Cortina et al., 2017; Leung, 2001). In contrast, Western cultures tend to anchor their educational systems in a Socratic pedagogical philosophy and tend to promote educational philosophies that view learning as an experience that should be enjoyable as an end in itself. Teachers tend to place less emphasis on encouraging students to compete and schools encourage critical thinking, including questioning knowledge, beliefs, and authority, which is relatively less tolerated in Eastern educational cultures.

Cultural variables can have a significant impact on relationships within the school context, particularly in collectivist and individualist societies. In more egalitarian societies, people are more likely to acknowledge equal rights and tend to be more cooperative and pro-social, resulting in building friendly relationships with their superiors, subordinates, and peers (Cortina et al., 2017; Hofstede et al., 2010). However, in more hierarchical cultures with greater power distance, roles are more strictly defined, and teaching activities in school context tends to be teacher-centered and strictly disciplined (Hofstede et al., 2010). Teachers and students are likely to perceive greater status differences between them (Cortina et al., 2017), and compared to more egalitarian cultures, teachers in high power distance cultures are less likely to interact or form friendly relationships with their students (Chiu et al., 2016). In high power distance cultures, obedience is strongly encouraged and teachers are seen as "knowledge brokers" and their skills evaluation are largely associated with their students' learning success. In contrast, in societies with lower power distance, successful learning is attributed to the interaction between teachers and students, both of whom are seen as responsible for success, and teachers in these societies are expected to treat students more fairly (Cortina et al., 2017; Hofstede et al., 2010). However, research comparing individualistic and collectivist societies in terms of teacher-student relationships is limited and inconsistent. Several studies suggest that both teachers and students in collectivist cultures report a perception of greater closeness and support in the teacher-student relationship at different school grades (Bear et al., 2014; Beyazkurk & Kesner, 2005; Chen et al., 2019; Jia et al., 2009; Yang et al., 2013). However, this may be due to the fact that collectivist societies place a high emphasis on preserving social harmony. In addition, as mentioned previously, teachers in these societies have a high social status and students are required to respect their authority, which can cause them to refrain from expressing dissent and criticism of the teacher, thus limiting conflicting behaviors and promoting socially desirable behaviors.

Moreover, compared to Western countries, Eastern students spend much more time in contact with their teachers, which could lead to a higher perception of support and a better quality of relationship (Jia et al., 2009). However, studies have yielded mixed results (Aldridge & Fraser, 2000; Bear et al., 2014). For example, although Aldridge and Fraser (2000) found no difference in student-perceived teacher support between Australian and Taiwanese early adolescents, Bear et al. (2014) found that Chinese elementary school teachers perceived their relationships with students as less close than American teachers, although no difference was found among teachers in middle and high schools. Similarly, Chen et al. (2019) found no differences in teachers' perceptions on the levels of closeness in the relationships with their students between Chinese and Dutch elementary school teachers. However, there is less literature examining the degree of conflict in the teacher-student relationships. Chen et al. (2019) found that in China both students and teachers have reported that they perceive less conflict in the teacher-student relationship than in their Dutch counterparts, although no differences were found when comparing Turkish and US elementary school teachers (Beyazkurk & Kesner, 2005). Therefore, additional research is needed to clarify these issues.

Furthermore, it should also be considered that perceptions of closeness and conflict in the quality of the teacher-student relationship may also vary by school types. Differences may exist in how teachers and students perceive the quality of their relationship in elementary and junior high schools. Children in elementary school spend long periods of time with the predominant teacher and few other teachers, whereas students in secondary school are exposed to more teachers with whom they spend fewer hours per week in contact (Roorda et al., 2019). Teachers tend to serve as a safe base rather than a safe haven in secondary school (De Laet et al., 2014; Verschueren, 2015). Consistent with this, evidence suggests that adolescents perceive their teachers as caregivers who encourage them to try new things and pursue their goals and future plans (De Laet et al., 2014). This may be because students in adolescence are more likely to seek comfort and support from peers, be more autonomous with adults, and exhibit greater self-regulation skills than in childhood (Verschueren, 2015). In addition, academic achievement received greater emphasis in secondary school and students tend to perceive teachers in secondary school as less caring and friendly than in elementary school (Davis, 2006). Although elementary teachers tend to value their relationships with their students, middle school teachers tend to feel more alienated and detached from their relationship with their students and describe it as one of recognition and respect (Hargreaves, 2000). Consequently, adolescents may perceive their relationship with teachers as less close than their elementary school counterparts.

1.3. Reporter agreement in student-teacher relationship quality in cross-cultural research

Research on the quality of the teacher-student relationship has been dominated by teachers' perspectives (i.e., how teachers perceive their relationships with students, as measured along the dimensions of closeness and conflict). However, it is increasingly recognized that obtaining a more comprehensive understanding of this mutual relationship requires consideration of both teacher and student perspectives. Indeed, Pianta et al. (2003) indicated that the framework of teacher-student relationship development systems is based on the premise that teachers' and students' mutual perceptions, as well as their shared relationships, are determined by unique internal working models of the self and the other in the student-teacher dyad. Therefore, it is important to incorporate both teacher and

student perspectives to gain a more complete view of teacher-student relationships.

Teachers and students develop these internal representations based on their previous attachment experiences and, for this reason, perceptions of their relationships are not always correlated (Chen et al., 2019; Pianta et al., 2003). Empirical studies conducted in Western countries tend to find a low-to-moderate correlation between teachers' and students' perceptions of the quality of their dyadic relationships (Jerome et al., 2009; Koomen & Jellesma, 2015; Zee & Koomen, 2017). Teachers and students seem to agree more on the dimensions of conflict, which could be because conflicts tend to stabilize over time and are more evident in their interactions (Hughes, 2011; Jerome et al., 2009; Koomen & Jellesma, 2015; Zee & Koomen, 2017).

Little information is available on the degree of concordance from Eastern countries. Chen et al. (2019) found that Chinese teacher-student dyads are reported as having more agreement with regard to the closeness dimension and less agreement about the conflict dimension than Dutch teacher-student dyads, which appears to be the opposite of existing data on Western countries. According to Chen et al., this can be explained by the fact that China is a collectivist society with a greater focus on maintaining social harmony. Thus, it is possible that the dimension of closeness is perceived as more important by Chinese teachers and students and therefore it is important to achieve a good relationship between teachers and students to maintain group harmony. Furthermore, traditional Chinese culture provides a larger power distance between teachers and students and requires respect and conformity with authority. This may, therefore, lead students to express more socially desirable behavior and discourage their criticism of teachers and educational methods, resulting in a lower degree of conflict. In contrast, in Western cultures, greater egalitarianism is the norm, and it is not uncommon for students to express dissent and criticism of their teachers, thus encouraging the emergence of conflict. Moreover, the expression of dissent and criticism can be understood as a way to assert one's autonomy and independence, which are highly valued in individualistic societies. In this sense, students' expression of criticism may be less damaging to their relationship with the teacher, as it is more likely to be accepted or even culturally encouraged. However, there is a paucity of research on cross-cultural comparisons in this area of investigation. Consequently, this study aimed to extend the knowledge on the cross-cultural comparison of the teacher-student relationship by exploring the levels of agreement between teachers and students on the perception of their relationship as conflictual or close. In addition, previous research has rarely focused on examining the degree of agreement between teachers and students on perceptions of relationship quality across different school levels. This is a crucial limitation as some authors suggest that as students get older, they tend to be more peer-oriented and less emotionally attached to teachers (e.g., Roorda et al., 2011; Zee & Koomen, 2017). In addition, as students transition to high schools, they are exposed to more teachers with whom they tend to spend less time, and the emphasis may shift more toward instruction and academic achievement. It is not impossible that these factors affect perceptions of the student-teacher relationship quality, resulting in greater divergence in perceptions of the relationship between students and teachers. From the teachers' perspective, there is evidence that perceptions of closeness tend to decrease in the upper elementary grades (Jerome et al., 2009; Koomen et al., 2012), whereas the average level of perceived conflict in the student-teacher relationship tends to remain stable (Koomen et al., 2012). Therefore, our study compared the agreement levels in teacher-student relationship quality in both elementary and junior high schools across two different cultures.

1.4. The present study

In the present study, we compared the student-teacher relationship quality between a Western country (i.e., Italy) and an Eastern country (i.e., China). Chinese students and teachers have been compared before on this topic, although the data are scarce. Moreover, countries compared in previous studies were predominantly English-speaking and not European. The only European country that Chinese students and teachers were compared with was the Netherlands (Chen et al., 2019). Italy, like the Netherlands, is an individualistic country; however, compared to the Netherlands, Italy is a more hierarchical society with a shorter democratic history, whereas the Netherlands seems to support more egalitarian policies (Dang, 2020). In contrast to the Netherlands, both Italy and China are male-oriented and hierarchical societies (Dang, 2020). Despite the similarities in terms of hierarchical societies, it is possible that China has a stronger expression in this direction compared to Italy (Hofstede et al., 2010). Moreover, Italy and China tend to anchor their educational systems in two different traditions of educational philosophy. Indeed, the Chinese school is linked to Confucian philosophy, whereas Italy anchors its educational system more in a Socratic pedagogical philosophy.

Although Italy is considered to be an individualistic country, it is not insensitive to issues of collectivistic culture, particularly in its central and southern regions. Moreover, although Italy is inspired by a Western Socratic pedagogical tradition, some of its cultural dimensions, such as power distance and the degree of hierarchy, make the country more comparable to China than to other European and Western nations. To explore cultural variations in the quality of the teacher-student relationships and the degrees of agreement between teachers and students regarding their perceptions of the quality of their reciprocal relationships, it is interesting to understand how two countries such as Italy and China present similarities or differences along this dimension. With regard to this, we expected more similarities than differences between Italy and China in terms of the quality of the teacher-student relationship in comparison with what Chen et al. (2019) found in their study between the Netherlands and China.

In addition to investigating the quality of the teacher-student relationship in the two different cultures, this study aimed to estimate the conflict and closeness with respect to the perceptions agreement between the teachers and students and to compare these in the two cultures. Ultimately, our study included three objectives. The first objective was to test measurement invariance of reports by students and teachers regarding their relationship quality across countries. Testing for measurement invariance has thus become an important topic in psychological research, especially in cross-cultural research where the issue of equivalence of psychological measures is essential. Without testing for measurement invariance, it is difficult to understand whether differences between two groups are due to cultural factors or measurement variance. Based on the results of Chen et al. (2019), we hypothesized that the closeness dimension would have more noninvariance than the conflict dimension. Italy and China are similar in terms of hierarchy levels and power

distance, which we believed would lead to similar perceptions of the conflict dimension in the teacher-student relationship in the two cultures. In contrast, the two countries are anchored in two different pedagogical traditions, with China tending to emphasize rigor and sacrifice in study and to promote individual competition among students, whereas Western cultures, such as Italy, favor a vision of learning as an experience to be enjoyed. It is possible that such pedagogical traditions result in different aspects of the "closeness" dimension being emphasized in the two cultures. For example, Chinese students emphasize an empathetic attitude on the part of the teacher, whereas Italian students emphasize aspects related to a relaxed and pleasant feeling. The second objective was to compare the means of the perceptions of teachers and students regarding the relationship between Italian and Chinese samples. Compared to the study by Chen and colleagues pertaining the comparison between the Netherlands and China, we expected Italy and China to show fewer differences, especially in the dimension of conflict. Compared to the Netherlands, Italy and China are more comparable in terms of hierarchical levels and power distance. This could lead to the two countries being similar in terms of the level of closeness reported by students and teachers. Italy, which is influenced by collectivist aspects, remains a Western, democratic, predominantly individualistic country and is more similar to the Netherlands in terms of egalitarianism. In this sense, the expression of conflict is more expected and tolerated in the Italian school context than in the Chinese context. Given the greater emphasis on harmony in the Chinese cultural context, it is thus possible that Italian students report higher levels of conflict in the teacher-student relationship. Indeed, we expected Italy and China to be comparable on the closeness dimension, but that the Chinese sample would report lower levels of conflict. The third objective was to compare the degrees of agreement between students and teachers regarding their perceptions of the quality of the teacher-student relationship in the two countries. We expected teachers and students in both countries to have small to moderate agreement for closeness and conflict dimensions (Chen et al., 2019). Additionally, our hypotheses were also separately tested in elementary schools and junior high schools.

2. Method

2.1. The Chinese and Italian educational systems

In China, children spend 6 years in elementary school (approximately ages 8–13 years), 3 years in junior high school (approximately ages 14–16 years), and another 3 years in senior high school (approximately ages 17–19 years old). In this Chinese education system, there are different teachers for different subjects and a teacher usually teaches only one subject. The number of classes taught by a single teacher usually ranges from two to five (in some cases more) depending on the subjects they teach. Among all the teachers in each class, there is a head teacher who spends most of their time with the students in that class. The head teacher must take on additional responsibilities, such as keeping in touch with the students' parents and looking after the daily activities of the entire class. In many Chinese elementary and high schools, the number of students per class is usually between 40 and 50 (sometimes more or less, depending on the region and the school).

In Italy, students attend 3 years of preschool (approximately ages 3–6 years), 5 years of elementary school (approximately ages 6–11 years), 3 years of junior high school (approximately ages 11–14 years), and 5 years of senior high school (approximately ages 14–19 years). In a typical Italian classroom, there are usually 20–25 students in an elementary or high school class. In elementary school there are usually two teachers (humanities and science) and in junior and senior high schools there are different teachers for each subject. The number of lessons depends on the subject taught. Each class also has a head teacher who is usually the teacher who spends the most time on didactic activities in the class. The head teacher is responsible for coordinating classroom activities, teacher meetings, and communicating with students' families.

2.2. Participants

2.2.1. Italian participants

In Italy, 31 teachers ($M_{age} = 45.55$ years, $SD = 8.57$, range = 25–65) participated in this research, including 28 females (90.3%) and three males (9.7%). The response rate of teachers was 72.1%. There were 15 elementary school teachers and 16 junior high school teachers. On average, these teachers spent 10.94 h ($SD = 5.96$, range = 2–22) per week on teaching activities in the specific classrooms; mean years of teaching experience in this group was 19.23 years ($SD = 9.83$, range = 2–42 years). More information about the teachers' demographics and teaching activity characteristics are shown in Appendix Table A1. There were 1647 Italian-speaking students (772 girls, 46.9%) ages 9–14 years ($M = 10.98$, $SD = 1.36$) who participated in the study, consisting of 906 elementary school students and 741 junior high school students. Most of these students regarded themselves as native Italian (84.9%) and the others were first or second wave immigrants (15.1%). Italian teachers did not report on relationships with all students, but only with a subsample ($n = 248$) of students (for details on how these students were selected, see the Procedures section), including 120 elementary school students and 128 junior high school students. All Italian participants were from schools located in different geographical regions of Italy (i.e., North and South).

2.2.2. Chinese participants

In China, 28 teachers ($M_{age} = 34$ years, $SD = 7.88$, range = 25–49) participated in this research, including 14 females (50%) and seven males (25%); seven teachers did not report their gender. The response rate of teachers was 93.3%. The Chinese teacher sample consisted of 15 elementary school teachers and 13 junior high school teachers. These teachers, on average, spent 13.24 h ($SD = 1.27$, range = 10–15) per week on teaching activities in classrooms and the mean teaching experience was 11.92 years ($SD = 9.42$, range = 2–29). Appendix Table A1 provides more information about participating teachers' demographics and teaching activity

characteristics. The number of the student participants in China were 1474 Chinese-speaking students (696 girls, 47.2%) ages 9–14 years ($M = 11.78$, $SD = 1.52$), consisting of 774 elementary school students and 700 junior high school students. Most of these students were of Han ethnicity (94.9%) with the remaining students (4.8%) self-reporting as minoritized students. The number of students participating in the study per classroom ranged from 34 to 54. Chinese teachers did not report on relationships with all students, but only with a subsample ($n = 198$) of students (for details on how these students were selected, see the Procedures section), including 113 elementary school students and 85 junior high school students. All Chinese participants were from schools located in southeast China.

2.3. Instruments

2.3.1. The Student-Teacher Relationship Scale–Short Form

The Student-Teacher Relationship Scale–Short Form (STRS-SF; Settanni et al., 2015), from the original STRS (Pianta, 2001), was used to measure the teacher-perceived affective relationships with students. STRS-SF is a 14-item scale with two subdimensions: closeness (six items; e.g., "This child values his/her relationship with me") and conflict (eight items; e.g., "The child and I always seem to be struggling with each other"). Teachers rated these qualities according to the extent they agreed with each item on a 5-point Likert scale ranging from 1 (*completely disagree*) to 5 (*completely agree*). The averages of the items in each subdimension were respectively computed to form the final scores, with higher scores indicating a teacher-student relationship with a higher level of closeness or conflict.

Previous research shows that the STRS-SF has good reliability with a Cronbach's α between 0.86 and 0.93 for closeness (Berchiatti et al., 2020; Longobardi, Settanni, Lin, & Fabris, 2020; Longobardi, Badenes-Ribera, et al., 2019; Longobardi, Settanni, et al., 2019; Settanni et al., 2015) and between 0.83 and 0.88 for conflict (Berchiatti et al., 2020; Longobardi, Badenes-Ribera, et al., 2019; Longobardi, Settanni, et al., 2019; Settanni et al., 2015) and has been reported to have good construct validity (Settanni et al., 2015). In the present research, the Italian version of STRS-SF, as revised by Settanni et al. (2015), was used with the Italian teachers and the reliability was good both for closeness (Cronbach's α = 0.88, McDonald's ω = 0.88) and conflict (Cronbach's α = 0.88, McDonald's ω = 0.88). To measure the teacher-perceived relationship with the Chinese teachers, we translated the STRS-SF into Chinese and employed a back-translation method. In the Chinese sample, the reliability was also good both for closeness (Cronbach's α = 0.93, McDonald's ω = 0.94) and conflict (Cronbach's α = 0.96, McDonald's ω = 0.96).

2.3.2. The Student Perception of Affective Relationship with Teacher Scale

The closeness and conflict subscales of the Student Perception of Affective Relationship with Teacher Scale (SPARTS; Koomen & Jellesma, 2015) were used to measure students' perceptions of the teacher-student relationship. Students were asked to report if each statement was true or not true using a 5-point Likert scale ranging from 1 (*No, that is not true*) to 5 (*Yes, that is true*). The closeness subscale consists of eight items (e.g., "When I feel uncomfortable, I go to my teacher for help and comfort") and the conflict subscale consists of 10 items (e.g., "I easily have quarrels with my teacher"). The final scores were the means of the items in each subdimension with higher scores indicating a teacher-student relationship with higher levels of closeness or conflict.

In previous research, the SPARTS has been reported to have good reliability with Cronbach's α between 0.75 and 0.84 for closeness (Chen et al., 2019; Longobardi et al., 2018) and between 0.72 and 0.84 for conflict (Chen et al., 2019; Longobardi et al., 2018; Marengo et al., 2018). In the present study, the Italian version of SPARTS was used for the Italian students as its applicability had been demonstrated in previous research in Italy (Longobardi et al., 2018). Its reliability was good in the present research, both for closeness (Cronbach's α = 0.83, McDonald's ω = 0.83) and for conflict (Cronbach's α = 0.73, McDonald's ω = 0.72). In the Chinese student sample, these two subscales of SPARTS in the Chinese language, retrieved from Chen et al. (2019), were used. In previous research (Chen et al., 2019), the Chinese version of SPARTS showed good reliability. In the current Chinese sample, the reliability was also adequate for closeness (Cronbach's α = 0.87, McDonald's ω = 0.87) and conflict (Cronbach's α = 0.78, McDonald's ω = 0.78).

2.4. Procedure

In Italy, ethical approval was received from the ethical committee of the university, whereas in China it was obtained from the Bureau of Education of the city where the research was conducted. The convenience sampling technique was used to recruit schools. We contacted schools by telephone or e-mail. In Italy, two elementary schools (with seven branches in total) and junior high schools (with three branches in total) agreed to participate. In China, one elementary school and one junior high school participated in this study.

Before data collection, the nature and objective of this research were explained to all the participants and individual consent forms were obtained from teachers, students, and parents. Participation in both countries was voluntary, without remuneration or gifts. All participants were assured that their answers would be used only for research purposes and that their identity would remain anonymous.

Italian and Chinese teachers were asked to report on the relationship quality (i.e., closeness and conflict) with eight students (four girls and four boys, randomly chosen) in their classes. The Italian teachers filled out the online questionnaire and had to complete the STRS for each of the eight randomly selected students. However, some Chinese teachers did not report on enough students (ranging from two to eight), which resulted in the final teacher-reported student sample comprising 248 Italian students and 198 Chinese students. In Italy, the head teachers who spent relatively more time with the students (usually the Italian language or science teachers) filled in the questionnaire online. In China, the head teachers, who take care of the daily affairs of the whole class and spend the most

time with students, were asked to complete the paper questionnaires in their available time. Typically, it took 40–50 min for the teachers to complete all scales.

Students were asked to rate their relationship with their head teachers. They finished all the scales in their classrooms during class time. A research assistant gave the students the standardized instructions and stayed in the classroom in case they had any questions. The data from the students were all collected in paper/pencil form. It took about 10–20 min for students to complete all scales (SPARTS and demographic information) used in the present study and it took approximately an additional 30 min to complete other scales (e.g., sensitivity scale with an exploratory aim, bullying scale under the request of schools) unrelated to the objectives of the present study.

2.5. Data analysis

The basic data analyses were conducted in SPSS 22 and the advanced analyses in Mplus 8.3 (Muthén & Muthén, 1998-2017). To keep the sample size as large as possible and to enhance the statistical power, the missing values ($< 1\%$) were handled by full maximum likelihood estimation (Enders, 2001). To deal with the nested data structure (i.e., students nested in classrooms with the same teacher) and to address biased estimations due to the multi-level data structure, the option of "TYPE = Complex" in ANALYSIS command was used in Mplus to deal with the clustered sampling. This option generates adjusted standard errors by considering the non-independence of observation (Muthén & Muthén, 1998-2017). The strategies of data analysis in similar research (Cadima et al., 2015; Chen et al., 2019) were followed; there were three steps of analysis in the present research.

In the first step, measurement invariance was examined by conducting multi-group confirmatory factor analysis (CFA) of the students and teachers separately in the overall sample and separately in the elementary school subsample and the junior high school subsample. For students, two factors of the teacher-student relationship (i.e., closeness and conflict) were included in one measurement model. Because recommendations suggest a minimum of 200 cases for a model with two factors when there are missing values (Wolf et al., 2013), two measurement models were separately examined for closeness and conflict among teachers. First, the assumption of the configural invariance (i.e., the basic model structure was the same with the same number of constructs and items across groups) was tested. Second, to examine the metric invariance, the factor loadings across the groups were constrained to be equal whereas the intercepts and residual variances were freely estimated. Third, the factor loadings and the item intercepts were both set to be equal across the groups to test for scalar invariance. The method to estimate the model was the maximum likelihood with robust standard errors and chi-square. The fit indices and their cut-off points used to evaluate the overall goodness-of-fit included the (a) chi-square statistic, (b) Root Mean Square Error of Approximation (RMSEA ≤ 0.08; McDonald & Ho, 2002), (c) Comparative Fit Index (CFI ≥ 0.90; Bentler, 1992), and (d) Standardized Root Mean Square Residual (SRMR ≤ 0.08; Hu & Bentler, 1999). To compare nested models, Satorra and Bentler's (2001) scaled chi-square difference test was employed. As the chi-square difference test results are highly influenced by the sample size, three additional fit indices variation were also used, including ΔRMSEA ≤ 0.01 (Chen, 2007), ΔCFI ≤ 0.01 (Cheung & Rensvold, 2002), and ΔSRMR ≤ 0.03 in the metric invariance test and ΔSRMR ≤ 0.01 in the scalar invariance test (Chen, 2007). The nonsignificant chi-square difference or the three fit indices variation smaller than the cut-off point indicated the measurement invariance across the groups.

In the second step, latent means of the teacher-perceived and student-perceived relationship in the total sample and in elementary and junior high school subsamples were separately compared across Italy and China to investigate cultural differences. Observed mean values were also calculated and compared to investigate the compensation effect and spurious differences (Steinmetz, 2013). Models with and without covariates (i.e., students' gender, age, ethnicity, and the significant teacher variables in Table 1) were all tested because these covariates tend to be correlated with teacher-student relationships (McGrath & van Bergen, 2015) or they are significantly different between the two countries. When there was a significant difference in the latent means between the two countries, Cohen's d was calculated. Although the cut-off values of Cohen's d for small (0.2), medium (0.5), and large (0.8) effects are only general guidelines (Cohen, 1988), we still reported this value to quantitatively represent the effect size and to facilitate comparison with other similar studies.

In the third step, correlations between teacher-perceived relationship quality and student-perceived relationship quality were

Table 1
The comparison of the Italian and Chinese teachers' characteristics.

	Elementary school			Junior high school			Total		
	Italy	China	Differences	Italy	China	Differences	Italy	China	Differences
	$n = 15$	$n = 15$		$n = 16$	$n = 13$		$N = 31$	$N = 28$	
Gender			$\chi^2 = 0.43$			$\chi^2 = 6.86^{**}$			$\chi^2 = 4.51^*$
Female	12	9		16	5		28	14	
Male	3	4		0	3		3	7	
Missing	0	2		0	5		0	7	
Age in years (*SD*)	44.87 (10.43)	34.00 (7.36)	$t = 3.30^{**}$	46.19 (6.67)	34.00 (8.92)	$t = 4.07^{***}$	45.55 (8.57)	34.00 (7.88)	$t = 5.25^{***}$
Teaching years (*SD*)	18.87 (12.07)	11.21 (9.17)	$t = 1.91$	19.56 (7.55)	12.90 (10.17)	$t = 1.92$	19.23 (9.83)	11.92 (9.42)	$t = 2.79^{**}$
Teaching hours (*SD*)	14.27 (6.32)	13.07 (1.00)	$t = 0.72$	7.81 (3.51)	13.46 (1.57)	$t = -5.67^{***}$	10.98 (1.36)	11.78 (1.52)	$t = -15.46^{***}$

Note. $^*p < 0.05$, $^{**}p < 0.01$, $^{***}p < 0.001$.

Table 2

Model fit indices and model comparison statistics of testing for measurement invariance in full sample.

	χ^2	df	p	RMSEA	90% CI	CFI	SRMR	$\Delta\chi^2$	Δdf	p	ΔRMSEA	ΔCFI	ΔSRMR
SPARTS (Closeness + Conflict)													
Configural invariance	1204.983	268	< 0.001	0.047	[0.045, 0.050]	0.916	0.050						
Metric invariance	1310.689	284	< 0.001	0.048	[0.046, 0.051]	0.908	0.056	106.392	16	< 0.001	0.001	0.008	0.006
Scalar invariance	2543.738	300	< 0.001	0.069	[0.067, 0.072]	0.799	0.071	1112.069	16	< 0.001	0.021	0.109	0.015
Partial scalar invariance	1318.994	293	< 0.001	0.047	[0.045, 0.050]	0.908	0.056	15.527	9	0.077	−0.001	0.000	0.000
STRS-SF (Closeness)													
Configural invariance	106.605	18	< 0.001	0.149	[0.122, 0.176]	0.885	0.034						
Configural invariance.2	22.488	16	0.128	0.043	[0.000, 0.081]	0.992	0.022						
Metric invariance	27.680	21	0.150	0.038	[0.000, 0.072]	0.991	0.064	5.527	5	0.355	−0.005	0.001	0.042
Scalar invariance	48.992	26	0.004	0.063	[0.035, 0.090]	0.970	0.084	16.842	5	0.005	0.025	0.021	0.020
Partial scalar invariance	33.435	24	0.095	0.042	[0.000, 0.073]	0.988	0.079	4.999	3	0.172	0.004	0.003	0.015
STRS-SF (Conflict)													
Configural invariance	150.137	40	< 0.001	0.111	[0.093, 0.130]	0.892	0.067						
Configural invariance.2	109.620	38	< 0.001	0.092	[0.072, 0.112]	0.930	0.060						
Metric invariance	102.821	45	< 0.001	0.076	[0.057, 0.095]	0.943	0.065	1.835	7	0.968	−0.016	−0.013	0.005
Scalar invariance	116.507	52	< 0.001	0.075	[0.056, 0.093]	0.937	0.073	13.178	7	0.068	−0.001	0.006	0.008

Note. SPARTS = Student Perception of Affective Relationship with Teacher Scale; STRS-SF = The Student-Teacher Relationship Scale–Short Form; Configural invariance.2 = modified configural invariance model. There were 1647 Italian students and 1474 Chinese students completed the SPARTS in the full sample. The STRS was completed by 31 Italian teachers and 28 Chinese teachers for 248 Italian students and 198 Chinese students, respectively, in the full sample.

Table 3
Model fit indices and model comparison statistics of testing for measurement invariance in elementary school subsample.

	χ^2	df	p	RMSEA	90% CI	CFI	SRMR	$\Delta\chi^2$	Δdf	p	ΔRMSEA	ΔCFI	ΔSRMR
SPARTS (Closeness + Conflict)													
Configural invariance	766.157	268	< 0.001	0.047	[0.043, 0.051]	0.917	0.050						
Metric invariance	844.802	284	< 0.001	0.048	[0.045, 0.052]	0.906	0.058	89.336	16	< 0.001	0.001	0.010	0.008
Scalar invariance	1544.178	300	< 0.001	0.070	[0.067, 0.074]	0.792	0.070	589.156	16	< 0.001	0.022	0.114	0.012
Partial scalar invariance	862.743	294	< 0.001	0.048	[0.044, 0.052]	0.905	0.058	18.616	10	0.045	0.000	0.001	0.000
STRS-SF (Closeness)													
Configural invariance	63.193	18	< 0.001	0.147	[0.108, 0.187]	0.922	0.032						
Configural invariance.2	16.921	16	0.391	0.022	[0.000, 0.090]	0.998	0.024						
Metric invariance	23.354	21	0.325	0.031	[0.000, 0.087]	0.996	0.073	6.161	5	0.291	0.009	0.002	0.039
Scalar invariance	28.551	26	0.332	0.029	[0.000, 0.081]	0.996	0.069	5.354	5	0.374	−0.002	0.000	−0.004
STRS-SF (Conflict)													
Configural invariance	95.146	40	< 0.001	0.109	[0.081, 0.137]	0.955	0.056						
Configural invariance.2	56.339	38	< 0.001	0.062	[0.022, 0.098]	0.985	0.052						
Metric invariance	59.571	45	< 0.001	0.053	[0.000, 0.086]	0.988	0.061	6.443	7	0.489	−0.009	−0.003	0.009
Scalar invariance	66.817	52	< 0.001	0.049	[0.000, 0.081]	0.988	0.066	6.127	7	0.525	−0.004	0.000	0.005

Note. SPARTS = Student Perception of Affective Relationship with Teacher Scale; STRS-SF = The Student-Teacher Relationship Scale–Short Form; Configural invariance.2 = modified configural invariance model. The elementary school subsample who completed the SPARTS consisted of 906 Italian students and 774 Chinese students. The teacher-reported student sample consisted of 120 Italian students and 113 Chinese students in the elementary school subsample.

Table 4
Model fit indices and model comparison statistics of testing for measurement invariance in junior high school subsample.

	χ^2	df	*p*	RMSEA	90% CI	CFI	SRMR	$\Delta\chi^2$	Δdf	*p*	ΔRMSEA	ΔCFI	ΔSRMR
SPARTS (Closeness + Conflict)													
Configural invariance	832.009	268	< 0.001	0.054	[0.050, 0.058]	0.917	0.054						
Metric invariance	897.398	284	< 0.001	0.055	[0.051, 0.059]	0.910	0.062	62.627	16	< 0.001	0.001	0.007	0.008
Scalar invariance	1774.313	300	< 0.001	0.083	[0.079, 0.086]	0.784	0.085	783.78	16	< 0.001	0.028	0.126	0.023
Partial scalar invariance	914.867	293	< 0.001	0.054	[0.050, 0.058]	0.909	0.063	18.910	9	0.026	−0.001	0.001	0.001
STRS-SF (Closeness)													
Configural invariance	67.150	18	< 0.001	0.160	[0.120, 0.202]	0.921	0.050						
Configural invariance.2	24.675	14	0.038	0.085	[0.020, 0.138]	0.983	0.033						
Metric invariance	44.216	19	< 0.001	0.112	[0.069, 0.155]	0.959	0.094	28.324	5	< 0.001	0.027	0.024	0.061
Partial metric invariance	30.372	18	0.034	0.080	[0.022, 0.128]	0.980	0.070	5.576	4	0.233	−0.005	0.003	0.037
Scalar invariance	70.492	23	< 0.001	0.139	[0.103, 0.177]	0.924	0.103	32.217	5	< 0.001	0.059	0.056	0.033
Partial scalar invariance	29.583	19	0.057	0.072	[0.000, 0.121]	0.983	0.066	0.3154	1	0.574	−0.008	−0.003	−0.004
STRS-SF (Conflict)													
Configural invariance	246.024	40	< 0.001	0.220	[0.194, 0.247]	0.677	0.102						
Configural invariance.2	49.091	32	< 0.001	0.071	[0.072, 0.112]	0.973	0.044						
Metric invariance	80.012	39	< 0.001	0.099	[0.068, 0.130]	0.936	0.112	45.738	7	< 0.001	0.028	0.037	0.068
Partial metric invariance	58.116	38	0.019	0.071	[0.029, 0.105]	0.968	0.066	8.988	6	0.174	0.000	0.005	0.022
Scalar invariance	84.238	45	< 0.001	0.090	[0.060, 0.120]	0.939	0.116	26.002	7	< 0.001	0.019	0.029	0.050
Partial scalar invariance	69.085	43	0.019	0.075	[0.040, 0.107]	0.959	0.092	10.442	5	0.064	0.004	0.009	0.026

Note. SPARTS = Student Perception of Affective Relationship with Teacher Scale; STRS-SF = The Student-Teacher Relationship Scale–Short Form; Configural invariance.2 = modified configural invariance model. The junior high school subsample who completed the SPARTS consisted of 741 Italian students and 700 Chinese students. The teacher-reported student sample consisted of 128 Italian students and 85 Chinese students in the junior high school subsample.

calculated to explore the cultural differences in reporter agreement across the two countries. Fisher's *z* transformation (Fisher, 1915) was used to transform the correlation coefficients so that the *z*-test could be conducted to investigate the cultural differences in this reporter agreement.

3. Results

3.1. Measurement invariance

3.1.1. Measurement invariance in student-perceived relationship

Table 2 presents the model fit indices and model comparison statistics of the testing for measurement invariance in the full sample. As shown in Table 2, the baseline model (configural invariance) of student-perceived closeness and conflict fit the data well, χ^2 (268) = 1204.983, $p < 0.001$, RMSEA = 0.047, CFI = 0.916, SRMR = 0.050. Constraining the factor loadings across the groups to be equal did not significantly undermine the model fit, $\Delta\chi^2$ (16) = 106.392, $p < 0.001$, ΔRMSEA = 0.001, ΔCFI = 0.008, ΔSRMR = 0.006, which supported metric invariance. When adding constraints on all intercepts to be equal across groups to test scalar invariance, the model fit indices became worse, $\Delta\chi^2$ (16) = 1112.069, $p < 0.001$, ΔRMSEA = 0.021, ΔCFI = 0.109, ΔSRMR = 0.015. Modification indices indicated non-invariance of intercepts for six items (Items 1, 3, 5, 15, 20, 25; for specific items, see Appendix Table A2) out of eight closeness items and for one item (Item 4) out of 10 conflict items. According to Byrne et al. (1989) and Steenkamp and Baumgartner (1998), releasing the constraint on the intercepts of these items did not influence the latent means comparisons in the latter analysis as long as at least two of the intercepts were invariant. Therefore, the constraints on these items were set free to test the partial scalar invariance. Compared to the metric invariance model, the nonsignificant changes in the model fit indices supported the partial scalar invariance in the student-perceived teacher-student relationship, $\Delta\chi^2$ (9) = 15.527, $p = 0.077$, ΔRMSEA = −0.001, ΔCFI = 0.000, ΔSRMR = 0.000. The measurement invariance of the students' perceived relationship was also separately examined for elementary and junior high school students. As shown in Table 3 and Table 4, partial scalar invariance was confirmed for both elementary and junior high school students. Items with noninvariant intercepts for elementary students included four closeness items (Items 1, 5, 10, 15; see Appendix Table A2) and two conflict items (Items 4, 8; see Appendix Table A2), whereas for high school students there were five closeness items (Items 1, 3, 5, 15, 25; see Appendix Table A2) and two conflict items (Items 7, 24; see Appendix Table A2).

3.1.2. Measurement invariance in teacher-perceived relationship

As presented in Table 2, the full sample baseline model of teacher-perceived closeness was not best-fitted with the data, χ^2 (18) = 106.605, $p < 0.001$, RMSEA = 0.149, CFI = 0.885, SRMR = 0.034. The modification indices indicated the correlation between Item 12 (i.e., "This child openly shares his/her feelings and experiences with me") and Item 14 (i.e., "This child spontaneously shares information about himself/herself"). Because both items capture the extent of the students' self-disclosure to their teachers, the correlation between them was added to modify the baseline model. This modified configural invariance model fitted satisfactorily with the data, χ^2 (16) = 22.488, $p = 0.128$, RMSEA = 0.043, CFI = 0.992, SRMR = 0.022. There was no significant difference between the metric invariance model and the adjusted baseline model, $\Delta\chi^2$ (5) = 5.527, $p = 0.355$, ΔRMSEA = −0.005, ΔCFI = 0.001, ΔSRMR = 0.042, whereas the full scalar invariance model was not supported, $\Delta\chi^2$ (5) = 16.842, $p = 0.005$, ΔRMSEA = 0.025, ΔCFI = 0.021, ΔSRMR = 0.020. The modification indices indicated significant differences in the intercepts of Item 6 and of Item 13 (see Appendix Table A3). Releasing the constraints on these two intercepts to be equal enhanced the model fit, and the partial scalar invariance was supported, $\Delta\chi^2$ (3) = 4.999, $p = 0.172$, ΔRMSEA = 0.004, ΔCFI = 0.003, ΔSRMR = 0.015.

The full sample baseline model of teacher-perceived conflict (Table 2) was also not best-fitted with the data, χ^2 (40) = 150.137, $p < 0.001$, RMSEA = 0.111, CFI = 0.892, SRMR = 0.067. The modification indices indicated a significant correlation between Item 4 (i.e., "This child easily becomes angry with me") and Item 5 (i.e., "This child feels that I treat him/her unfairly"). Given that these two items both measure students' negative emotional experiences toward their teachers, the baseline model was modified by adding the correlation between the items. These modified configural invariance model fit indices were acceptable, χ^2 (38) = 109.620, $p < 0.001$, RMSEA = 0.092, CFI = 0.930, SRMR = 0.060. The metric invariance model was not significantly worse than the modified configural invariance model, $\Delta\chi^2$ (7) = 1.835, $p = 0.968$, ΔRMSEA = −0.016, ΔCFI = −0.013, ΔSRMR = 0.005. The scalar invariance model was also supported when compared to the metric invariance model, $\Delta\chi^2$ (7) = 13.178, $p = 0.068$, ΔRMSEA = −0.001, ΔCFI = 0.006, ΔSRMR = 0.008. Therefore, the scalar invariance model was taken as the final model.

We also examined measurement invariance separately for elementary school and junior high school teachers in their perceived relationships. In the elementary school sample, the scalar invariance model was supported for both teacher-perceived closeness and conflict (see Table 3 for details). In the junior high school sample, the partial scalar invariance model was supported for both teacher-perceived closeness and teacher-perceived conflict (see Table 4 for details). The items with noninvariant factor loadings for the junior high school sample were one closeness item (Chinese had a higher loading on Item 1; for the specific content of the items, see Appendix Table A3) and one conflict item (Italians had a higher loading on Item 11), and the items with noninvariant intercepts were four items (Items 1, 3, 6, 13) out of six closeness items and two items (Items 5, 9) out of eight conflict items. According to Byrne et al. (1989) and Steenkamp and Baumgartner (1998), the latent means in the junior high school subsample can be compared because at least two of the intercepts were invariant.

3.2. Teacher-student relationship mean differences

Based on the measurement invariance test results, the latent mean differences and the observed means between Italy and China in

both the teacher-perceived and the student-perceived relationship were compared. Considering the model simplicity and the similar results between the model with covariates and without covariates, the results from the model without covariates were reported when the (partial) metric invariance was supported. The observed means are presented in Table 5 to explore whether the compensation effect and the spurious differences (Steinmetz, 2013) existed.

First, mean differences were examined in the full sample. As shown in Table 5, for student-perceived closeness in the teacher-student relationship, the latent means difference was not significantly higher than zero, $\Delta = -0.08$, $z = -0.86$, $p = 0.393$. For student-perceived conflict, the latent means difference was significant with a value of 0.31 ($z = 4.30$, $p < 0.001$). Further analyses revealed a relatively small effect size (compared to the effect found in the study by Chen et al., 2019) between Italian students' perceived conflict and Chinese students' perceived conflict (Cohen's $d = 0.31$). For the teacher-perceived relationship quality, there were no significant differences in closeness, $\Delta = -0.02$, $z = -0.12$, $p = 0.905$, or conflict, $\Delta = -0.14$, $z = -0.65$, $p = 0.518$, across both countries.

Next, mean differences in the elementary school samples and the junior high school samples were separately examined. In the elementary school samples, most results remained unchanged except for student perceived conflict. Although the observed means were significantly different ($t = -2.51$, $p = 0.012$), the latent means of conflict between Italian and Chinese students were not significantly different ($\Delta = 0.15$, $z = 1.47$, $p = 0.142$; spurious differences). In the junior high school samples, there were no significant changes compared with the full sample. The latent mean difference for student perceived conflict in the junior high school sample was still significant, with a value of 0.52 ($z = 4.14$, $p < 0.001$, Cohen's $d = 0.57$).

In sum, these results revealed that the Italian students reported lower levels of conflict with their teachers than the Chinese students did in junior high school but similar levels of conflict in elementary school, whereas the Italian teachers and the Chinese teachers reported similar levels of conflict with their students in elementary school and junior high school. In addition, both the Italian students and teachers reported similar levels of closeness compared to their Chinese counterparts.

3.3. Cultural differences in reporter agreement

As shown in Table 6, in the Italian sample, teachers' perceptions of closeness were positively correlated with students' perceptions of closeness ($r = 0.34$, $p < 0.001$) and their perceptions of conflict were positively correlated with each other ($r = 0.32$, $p < 0.001$). In the Chinese sample, teachers' perceptions of closeness were also positively correlated with students' perceptions of closeness ($r = 0.39$, $p < 0.001$) and their perceptions on conflict were also positively associated ($r = 0.19$, $p < 0.05$). However, the difference in the correlation between teachers' perceived closeness and students' perceived closeness in the Italian sample and this correlation in the Chinese sample was not significant ($z = 0.601$, $p = 0.548$). Moreover, the correlation between teachers' perceived conflict and students' perceived conflict was not higher in the Italian sample than in the Chinese sample ($z = 1.452$, $p = 0.147$). These results suggest that there are no significant differences across countries in the degree of agreement between teachers and students on perceived closeness and conflict in the full samples.

In addition, reporter agreements were separately examined in the elementary school and junior high school samples. In the Italian elementary school sample, teachers' perceptions of closeness and conflict were positively correlated with students' perceptions of

Table 5

Observed mean and latent mean differences in teacher-perceived and student-perceived relationships.

	Observed mean comparisons				Latent mean differences					
	M (SD)				Without covariates			With covariates		
	Italy	China	t	p	Δ	z	p	Δ	z	p
Student-perceived:										
Closeness_Total	3.33 (0.87)	3.33 (0.93)	1.03	0.306	−0.08	−0.86	0.393	−0.07	−0.58	0.562
Conflict_Total	1.67 (0.34)	1.86 (0.43)	3.59	< 0.001	0.31	4.30	< 0.001	0.37	4.40	< 0.001
Closeness_ES	3.37 (0.94)	3.45 (0.10)	−1.56	0.120	0.02	0.16	0.873	0.01	0.09	0.932
Conflict_ES	1.75 (0.59)	1.83 (0.67)	−2.51	0.012	0.15	1.47	0.142	0.14	1.06	0.290
Closeness_JHS	3.28 (0.92)	3.20 (0.91)	1.69	0.092	−0.15	−1.20	0.230	0.12	0.70	0.482
Conflict_JHS	1.57 (0.56)	1.90 (0.64)	−10.36	< 0.001	0.52	4.14	< 0.001	1.31	4.44	< 0.001
Teacher-perceived:										
Closeness_Total	3.62 (0.76)	3.67 (0.98)	1.10	0.272	−0.02	−0.12	0.905	−0.03	−0.16	0.871
Conflict_Total	1.57 (0.52)	1.44 (0.63)	0.45	0.651	−0.14	−0.65	0.518	−0.14	−0.64	0.520
Closeness_ES	3.97 (0.80)	3.88 (1.01)	0.81	0.416	−0.18	−0.62	0.534	−0.24	−0.83	0.409
Conflict_ES	1.42 (0.68)	1.32 (0.83)	0.99	0.325	−0.11	−0.39	0.695	−0.12	−0.40	0.689
Closeness_JHS	3.31 (0.80)	3.39 (0.91)	−0.65	0.514	−0.43	−0.76	0.079	−0.51	−1.84	0.066
Conflict_JHS	1.70 (0.73)	1.59 (0.72)	1.12	0.264	0.02	0.12	0.906	0.03	0.22	0.822

Note. Closeness_ES = Closeness reported by elementary school participants; Conflict_ES = Conflict reported by elementary school participants; Closeness_JHS = Closeness reported by junior high school participants; Conflict_JHS = Conflict reported by junior high school participants; $\Delta = M_{\text{Chinese}} - M_{\text{Italian}}$. Students' basic demographic variables (i.e., gender, age, and ethnicity) were controlled in the model with covariates and teachers' demographics. Italian students ($N = 1647$; 906 elementary school students and 741 high school students) and Chinese students ($N = 1474$; 774 elementary school students and 700 junior high school students) reported on their relationship with their teachers. Thirty-one Italian teachers and 28 Chinese teachers reported on their relationship with 248 Italian students (120 elementary school students and 128 high school students) and 198 Chinese students (113 elementary school students and 85 high school students), respectively.

Table 6
The correlations between teacher-perceived teacher-student relationship and student-perceived teacher-student relationship (full samples).

	T-Closeness	T-Conflict	S-Closeness	S-Conflict
T-Closeness	–	−0.20**	0.39***	−0.44***
T-Conflict	−0.49***	–	−0.17*	0.19*
S-Closeness	0.34***	−0.21**	–	−0.50***
S-Conflict	−0.30***	0.32***	−0.57***	–

Note. T-Closeness = teacher-perceived closeness; T-Conflict = teacher-perceived conflict; S-Closeness = student-perceived closeness; S-Conflict = student-perceived conflict. The correlations from the Italian sample are in the lower-left quadrant and the correlations from the Chinese sample are in the upper-right quadrant. Italian sample size $n = 248$. Chinese sample size $n = 198$.
*$p < 0.05$, **$p < 0.01$, ***$p < 0.001$.

closeness ($r = 0.38$, $p < 0.001$) and conflict ($r = 0.45$, $p < 0.001$), respectively. In the Chinese elementary school sample, reporter agreement was found only for closeness ($r = 0.28$, $p < 0.01$) but not for conflict ($r = −0.09$, $p = 0.32$). Italian elementary school reporters' agreement on closeness was not significantly different from Chinese elementary school reporters' agreement on closeness ($z = 0.846$, $p = 0.397$), but the reporters' agreement on conflict was significantly different ($z = 4.329$, $p < 0.001$) in elementary schools between the two countries. In the junior high school sample, Italian teacher-reported closeness was significantly correlated with student-reported closeness ($r = 0.29$, $p < 0.001$) as was the relationship between teacher-reported conflict and student-reported conflict ($r = 0.25$, $p < 0.001$). In addition, Chinese junior high school teachers and students also moderately agreed on closeness ($r = 0.32$, $p < 0.01$) and conflict ($r = 0.44$, $p < 0.001$). The junior high school reporters in Italy and China did not differ significantly in agreement on either closeness ($z = 0.233$, $p = 0.816$) or conflict ($z = 1.526$, $p = 0.127$).

4. Discussion

In this study, the quality of the teacher-student relationship in elementary and junior high school was examined across China and Italy. Specifically, we explored the cross-cultural measurement invariance of the scales (i.e., SPARTS and STRS-SF), the observed and latent mean differences, and the reporters' agreement between teachers and students in these two countries.

4.1. Measurement invariance

4.1.1. Measurement invariance in student-perceived teacher-student relationship
The samples we examined tended to show differences in measurement models, especially in students' perceptions measured with SPARTS. The closeness dimension of SPARTS contained the most items that differed between the Italian and Chinese students, suggesting that the meanings of some closeness items may be different for students in these two cultures. Looking at these items (see Appendix Table A2), it seems that closeness for Italian students is characterized in terms of a relationship in which the children feel relaxed and comfortable with their teachers. This could reflect the pedagogical framework promoted in the Italian school context, where teaching is seen as an enjoyable and shared experience. Chinese students, by contrast, tended to score higher on items reflecting the teacher's attention to their emotional aspects and inner world. The closeness dimension seems to be characterized by the safe haven function for Chinese students to reduce their stress, making them feel more respected, accepted, and supported. This may be especially valuable to Chinese students as Eastern schools tend to be more stressful, place greater emphasis on authority, individual competition, and academic rigor, and encourage students to prove their abilities by outperforming their peers as compared to Western schools (Cortina et al., 2017; Leung, 2001). Furthermore, in collectivist societies, as opposed to individualist societies, the expression of feelings and emotions is discouraged (Matsumoto et al., 2008). This may also affect Chinese students' perceptions on closeness and they might perceive a teacher who notices their emotional needs and inner world as a closer one. In addition, our separate observation of the noninvariant closeness items in both elementary and junior high schools yield results that are similar with those for the full sample. In elementary schools, Chinese students seem to characterize closeness mainly with meanings related to intimacy and support in case of discomfort, whereas their Italian counterparts perceive closeness more in terms of relaxation and comfort in the relationship with the teacher. In junior high school, Chinese students tend to perceive closeness with the teacher as the extent to which the teacher is able to emotionally connect with them, whereas Italian students seem to emphasize teacher's support in moments of distress and discomfort.

Compared with the closeness dimension, the connotations of the conflict dimension as measured by SPARTS are relatively similar between countries. Looking at the few conflict items with different intercepts in the full sample and the primary subsample, conflict is more likely to be related to the perception of being punished more often in the Chinese sample. This could be crucial for them as the feeling of being punished more often could jeopardize the harmonious cohesion of the group, making them feel excluded and rejected. This seems to be a particularly salient aspect for collectivist cultures. Another interesting difference in the conflict dimension was found in the junior high school subsample. Specifically, Italian students in junior high schools tended to characterize the perception of conflict by relating it to the frequency of quarrels with the teacher, whereas Chinese students tended to refer to their own disobedience. As mentioned earlier, this may reflect the fact that Western countries tend to be more tolerant of expressing dissent compared to Eastern countries where expressing dissent is discouraged and there is strong pressure to obey and respect authority.

4.1.2. Measurement invariance in teacher-perceived teacher-student relationship

Measurement differences were also found in the teacher's perceived relationship between the two cultures. Italian teachers' perceptions of closeness seemed to be dominated by emotional and empathic aspects, whereas Chinese teachers' perceptions seemed to be dominated more by aspects related to perceptions of effectiveness and confidence. This may reflect the pedagogical traditions underlying the school systems in these two cultures. In China, the teacher is recognized as an authority and their skills are seen as closely related to the learning level of their students. In this sense, it is possible that the perception of closeness in the Chinese context is more characterized by a sense of effectiveness and confidence on the part of the teacher. As for the conflict dimension, in both cultures it is similarly characterized by negative emotional reactions of the student.

Interesting differences emerge, however, when examining the non-invariant STRS items separately in elementary and junior high schools. Chinese teachers in the junior high school sample tended to have higher intercepts on several items in the closeness dimension than their Italian counterparts. These items seem to emphasize the closer relationship as characterized by more sharing of affect and a higher sense of perceived efficacy. These results not only support the Chinese cultural expectation that relates a teacher's prestige to their pedagogical effectiveness, but also seem to highlight more emotional connectedness for Chinese teachers to perceive a closer relationship with junior high school students than their Italian counterparts. This aspect might be particularly sensitive to Chinese teachers as they work in a cultural context that promotes bonding among members of a group and that tends to preserve harmony in social relationships. This trend also seems to be consistent with the dimension of teachers' perceived conflicts, where the intercept of Item 9 ("This child's feelings toward me may be unpredictable or change suddenly") was higher in Chinese junior high school teachers. However, it appears that Italian and Chinese elementary school teachers have similar perceptions of their relationship quality with students. The cultural differences between the two countries in terms of perceptions of the quality of the relationship with students increase as students move into adolescence and into secondary schools. It will be necessary to examine these differences in future research.

In sum, our results are aligned with the findings of Chen et al.'s (2019) cross-cultural research, but some differences can be noted. For example, regarding the conflict dimension, the teacher-student relationships of Dutch students are characterized more by a stronger expression of anger compared to Chinese elementary school students, whereas this difference was not found between Chinese and Italian students. In contrast to the comparison between the Chinese and Dutch elementary school students, the measurement of conflict in the Chinese and Italian students was similar in terms of anger expression. This could be due to Italy and China being more similar in terms of egalitarianism and hierarchy. Thus, it is possible that Dutch students express their negative feelings toward the teacher more freely than their Italian and Chinese counterparts. This suggests that it is important to continue the study of cultural variables that might influence the quality of the teacher-student relationship and to include other cultural dimensions, such as the degree of hierarchy and egalitarianism, in addition to individualism and collectivism.

4.2. Mean differences in relationship quality between China and Italy

Consistent with our initial hypotheses of cross-cultural mean differences, our data suggest more similarities than differences between Italy and China. In addition, our analyses also reveal that the observed means of conflict in elementary school were significantly different, whereas the latent means were not significantly different. In our opinion, this finding shows the importance of not limiting ourselves only to the observed means, but also to consider the latent means to obtain a more accurate and detailed understanding of cross-cultural differences.

Regarding the closeness dimension, our results found no differences in teachers' and students' perceptions of closeness in the two cultures. Compared to previous literature, our results are aligned with Bear et al. (2014) who found no significant difference in closeness between American and Chinese elementary school students. However, our results differ from Bear et al. (2014) in that there was a greater perception of closeness in American teachers than in Chinese teachers. Similarly, our data appear to contrast with those identified by Chen et al. (2019) who found greater perceptions of closeness by Chinese students than their Dutch counterparts. Our data failed to detect differences in students' perceptions of closeness, both in elementary and junior high school samples, thus suggesting that Italy may have more similarities with China than other Western and individualistic cultures on perceptions of closeness.

As for the conflict dimension, no cross-cultural differences were found for teacher-perceived student-teacher relationships, whereas the Italian students perceived less conflict in their relationships with teachers but not in elementary schools, which is surprising. Our results align with the research by Beyazkurk and Kesner (2005) who did not find significant statistical differences in terms of perceived conflict by Turkish and American teachers. However, our results appear to contrast with those found by Chen et al. (2019) in which Chinese elementary students perceived less conflict with their teachers than their Dutch counterparts. The cultural differences that exist between Italy and China may explain our results. Some evidence suggests that in more hierarchical societies (e.g., China), students tend to report a lower sense of belonging to their schools and this perception tends to be associated with poorer quality in their relationships with their teachers (Chiu et al., 2016; Cortina et al., 2017). Therefore, it is possible that the greater power distance and less egalitarianism could lead Chinese junior high school students to perceive their relationships with their teachers as having more conflict than Italian students do. Compared to the school system in Italy, the Chinese system may impose stricter discipline, emphasize sacrifice and austerity in the learning process, subject students to continuous assessment, and encourage individual competition. In the context of such a collectivist culture, being punished might be perceived as more negative because it affects social prestige and belonging to the group, which are values that are considered fundamental in these cultures (Chiu & Chow, 2011; Chiu & Khoo, 2003). At the same time, it is possible that punitive strategies are perceived as less harmful by Italian junior high school students. This aspect, together with a school context that places less emphasis on academic achievement and encourages greater expression of criticism, could contribute to the perception of the relationship with the teacher as less conflictal. However, our study identified differences

with respect to students' perception of conflict only in junior high school. Developmental and contextual factors may explain this result. Indeed, during adolescence, students become increasingly independent of adults and tend to rely more on peers for support and affection (Badenes-Ribera et al., 2019). Furthermore, the transition from elementary to high school is associated with several challenges, such as greater academic effort, adjustment to a new school context, more teachers to interact with, and less time spent with them (Longobardi, Badenes-Ribera, et al., 2019; Longobardi, Settanni, et al., 2019). In addition, adolescents tend to perceive teachers as less helpful and friendly than in elementary school, and in junior high school the relationship with students seems to have a higher value. Thus, it is possible that in such a situation, perceptions of a conflictual relationship with teachers tend to increase, especially among the Chinese student body where discipline and good academic performance are particularly encouraged. However, other explanations could be formulated and explored. For example, there is evidence that perceptions of a conflictual relationship with the teacher tend to be positively associated with age in adolescence (Marengo et al., 2018). In addition, junior high school students in China tend to be older than in Italy because of differences within the education systems. Therefore, it cannot be ruled out that sample characteristics, like age, played a role and that future research will need to consider this to clarify these findings.

4.3. Reporters' agreement in perceptions of teacher-student relationships

Finally, we examined the degree of agreement between teachers and students on perceptions of the quality of their relationship in elementary and junior high schools in both countries. In both Italy and China, teachers and students tend to moderately agree on most quality dimensions of their relationships (i.e., closeness and conflict) in both elementary schools and junior high schools, with no significant differences in the degree of agreement between the two countries. The only exception concerns the conflict dimension in the elementary school sample. Compared to the Italian sample, teachers and students in Chinese elementary school showed no significant correlations on the conflict dimension. One possible explanation is that unlike in individualistic societies, the expression of interpersonal conflict and dissatisfaction is discouraged in collectivist societies, and thus they are more concealed and less observable, resulting in a lack of agreement among reporters in conflict perceptions. In this sense, it is possible that the lack of expression of conflict by students leads teachers to perceive the quality of the relationship differently with students' perceptions. In addition, we did not find significant reporters' agreement difference in closeness dimension. This seems to partially differ from the work of Chen et al. (2019), who found greater agreement between Chinese teachers and students on the degree of closeness than their Dutch counterparts in elementary schools, linking this result to a greater propensity of collectivist cultures to avoid conflict and maintain social harmony. Future studies can further explore the specific cultural determinants that affect this agreement in the relationship perception within teacher-student dyads in different cultures.

4.4. Limitations and future directions

Our contribution must be interpreted within limitations of this study. First, we relied exclusively on self-report questionnaires (including a self-translated scale) to assess the quality of the teacher-student relationship. Therefore, aspects related to text comprehension, memory, and social desirability may have had an influence. Future research needs to combine self-report questionnaires with direct observation of teacher-student interactions in real time (Pianta et al., 2003) and/or with interviews to explore the qualitative aspects related to differences or similarities in different cultural contexts. Future studies should also strictly follow professional guidelines for test translation and adaptation (e.g., International Test Commission, 2017) to ensure accuracy of translation, adaptation, and applicability of a scale in different cultures. Second, due to the small sample size, the multi-group CFA analyses on measurement invariance of teachers' relationship perceptions were conducted separately for closeness and conflict, which did not take the potential correlation between these two dimensions into consideration and thus might affect the generalizability of the results. Although we had already employed various statistical significance criteria for the measurement invariance test, the relatively small subsample sizes of teachers' perceptions in each school type may still cause a lack of statistic power to detect smaller differences between the two countries. In future studies, more teachers should be recruited to increase the sample and subsample sizes to better examine the measurement invariance of the 2-factor model in STRS-SF. Third, students and teachers were compared in terms of their perceptions of the quality of the relationships in two different cultural contexts, but it is difficult to distinguish true cultural differences from differences due to non-cultural/personal factors. Future studies should pay more attention to and try to investigate, for example, the effects of teacher-student ratio, class size, age of enrollment, and group differences due to economic factors. In addition, personal attitudes toward cultural variables (i.e., interdependent and independent values) might also be taken into consideration in future studies. Questionnaires (e.g., Shteynberg et al., 2009) could be employed to measure these personal factors. Fourth, another limitation is the representativeness of the sampling. The intranational differences (e.g., regional differences within countries) might also influence teacher-student relationship quality at the subcultural and contextual level and could explain cross-cultural differences. For example, China is a vast country with relatively unbalanced development across its regions. However, all Chinese participants were recruited from schools located in southeast China, which it is more developed compared to the northwest region. Furthermore, the number of schools that participated in this study were small in both China and Italy, which could affect the validity of the cultural differences discovered in the present study. Future studies could select more schools from different regions and different subcultures in both countries to increase the representativeness of sampling. Finally, our study did not examine the dimension of dependency, which is one of the dimensions of teacher-student relationship quality that has been noted in previous studies and increasingly recognized in recent literature (Roorda et al., 2020). Future studies could also include the dimension of dependency in the cross-cultural investigation of the teacher-student relationship.

4.5. Conclusions and implications for research and practice

Overall, (partial) scalar invariance of SPARTS and STRS-SF in elementary and junior high school samples was found between China and Italy. In addition, in junior high school, Italian students reported experiencing a similar level of closeness, but a lower level of conflict compared to their Chinese peers. Finally, the Italian reporters' agreement between teachers and students in elementary school was higher on conflict, but no significant differences on closeness were found.

These conclusions may have some implications for research and practice in the future. In general, the study seems to suggest that instruments such as SPARTS and STRS can be used in a cross-cultural setting. However, this also suggests the need to expand research on teacher-student relationship quality from a cross-cultural perspective. More research should be conducted to compare not only countries that typically represent collectivist and individualist cultures, respectively, such as China and the US, but also countries that exhibit mixed characteristics between the two, such as Italy. Moreover, collectivism and individualism may not be the only cultural dimensions on which to base cross-cultural research on teacher-student relationship quality. Power distance, for example, might be an even more important aspect. From a practical point of view, we can reflect on the fact that the results obtained from research in one cultural context cannot simply be generalized to other cultures, which may have a significant impact on the strategies used to improve the quality of the teacher-student relationship in different countries. Furthermore, our study suggests that cultural differences are not expressed in the same way at different school levels. Therefore, the developmental stages of students and school systems characteristics must be considered when we look at the teacher-student relationship from a cross-cultural perspective. Our finding of more perceived conflict among Chinese junior high school students warrants additional attention as it is not known to what extent this higher level of conflict is also associated with lower wellbeing and achievement in school. There is no study, to our knowledge, to support the notion that conflict with the teacher is more detrimental to Chinese high school students than to students from other cultures. However, given the importance that collectivist cultures place on social harmony and group membership, and the importance that the Chinese educational system places on academic achievement, it is possible that a conflictual relationship with the teacher has an impact on Chinese students' psychological and social adjustment.

More generally, our study suggests the importance of developing a sensitive and culturally informed perspective on the quality of the teacher-student relationship, which is important for the integration and adaptation of students in multiethnic contexts. This note seems particularly important for Italy, which has experienced an increase in multiculturalism in its schools and a growing presence of the Chinese community in its territory in recent decades. Understanding the quality of the teacher-student relationship from a cross-cultural perspective could provide teachers, school psychologists, and principals with knowledge that facilitates the school adjustment of children from other cultures, thus promoting better socioemotional and academic development. Finally, interventions that address the quality of the teacher-student relationship that originated in Western cultural contexts (e.g., Spilt et al., 2012; see Kincade et al., 2020, for a meta-analysis; see Poling et al., 2022, for a review) must consider potential cultural variables that influence the quality of the teacher-student relationship before replicating them in other cultural contexts.

Appendix A

Table A1
The distributions of the Italian and Chinese teachers' characteristics.

	Italy		China	
	Frequency	Percentage	Frequency	Percentage
Gender				
Female	28	90.3%	14	50%
Male	3	9.7%	7	25%
Missing	0	0%	7	25%
Age (years)				
21–30	2	6.5%	13	46.4%
31–40	4	12.9%	6	21.4%
41–50	18	58.0%	7	25%
51–60	5	16.1%	0	0%
61–70	2	6.5%	0	0%
Missing	0	0%	2	7.2%
Teaching Years				
1–5	3	9.7%	9	32.1%
6–10	3	9.7%	4	14.3%
11–15	7	22.5%	1	3.6%
16–20	5	16.2%	4	14.3%
21–25	5	16.2%	3	10.7%
26–30	4	12.9%	3	10.7%
31–35	2	6.4%	0	0%
36–40	1	3.2%	0	0%
41–45	1	3.2%	0	0%

Table A1 (*continued*)

	Italy		China	
	Frequency	Percentage	Frequency	Percentage
Missing	0	0%	4	14.3%
Teaching Hours[a]				
1–5	4	12.9%	0	0%
6–10	16	51.6%	1	3.6%
11–15	5	16.1%	24	85.7%
16–20	2	6.5%	0	0%
21–25	4	12.9%	0	0%
Missing	0	0%	3	10.7%

Note. [a]Mean hours spent in classroom teaching activities per week.

Table A2
Invariant and non-invariant items (SPARTS).

Item number	Items	Higher intercept		
		Full sample	Elementary school sample	Junior high school sample
SPARTS_Closeness				
SPARTS 1	I feel at ease with my teacher.	Italy	Italy	China
SPARTS 3	When I don't feel well, my teacher notices and asks me about it.	China	–	China
SPARTS 5	When I feel uncomfortable, I go to my teacher for help and comfort.	China	China	Italy
SPARTS 10	I tell my teacher things that are important to me.	–	China	–
SPARTS 11	My teacher understands me.	–	–	–
SPARTS 15	I think I have a good relationship with my teacher.	Italy	Italy	China
SPARTS 20	If I have a problem, I can share it with my teacher.	China	–	–
SPARTS 25	The teacher usually knows how I feel.	China	–	China
SPARTS_Conflict				
SPARTS 4	Other children are less punished.	China	China	–
SPARTS 7	I easily have quarrels with my teacher.	–	–	Italy
SPARTS 8	My teacher particularly tells me what I do wrong and not what I do right.	–	China	–
SPARTS 12	My teacher treats me unfairly.	–	–	–
SPARTS 14	I guess my teacher thinks I whine a lot.	–	–	–
SPARTS 16	My teacher thinks I do things sneaky.	–	–	–
SPARTS 19	I guess my teacher gets tired of me in class.	–	–	–
SPARTS 21	I feel that my teacher does not trust me.	–	–	–
SPARTS 23	I can be very angry with my teacher	–	–	–
SPARTS 24	If the teacher says something is not allowed, I often do it anyway.	–	–	China

Note. "—" indicates invariant intercept. The country name in the "Higher intercept" column was the sample with a higher intercept.

Table A3
Invariant and non-invariant items (STRS-SF).

Item number	Items	Higher intercept		
		Full sample	Elementary school sample	Junior high school sample
STRS_Closeness				
STRS-SF 1	I share an affectionate, warm relationship with this child	–	–	China
STRS-SF 3	This child values his/her relationship with me.	–	–	China
STRS-SF 6	It is easy to be in tune with what this child is feeling.	Italy	–	China
STRS-SF 12	This child openly shares his/her feelings and experiences with me.	–	–	–
STRS-SF 13	My interactions with this child make me feel effective and confident.	China	–	China
STRS-SF 14	This child spontaneously shares information about himself/herself.	–	–	–
STRS_Conflict				
STRS-SF 2	This child and I always seem to be struggling with each other.	–	–	–
STRS-SF 4	This child easily becomes angry with me.	–	–	–
STRS-SF 5	This child feels that I treat him/her unfairly.	–	–	Italy
STRS-SF 7	This child seems me as a source of punishment and criticism.	–	–	–
STRS-SF 8	This child remains angry or is resistant after being disciplined.	–	–	–
STRS-SF 9	This child's feelings toward me can be unpredictable or can change suddenly.	–	–	China
STRS-SF 10	Despite my best efforts, I'm uncomfortable whit how this child and I get along.	–	–	–
STRS-SF 11	This child is sneaky or manipulative with me.	–	–	–

Note. "—" indicates invariant intercept. The country name in the "Higher intercept" column was the sample with a higher intercept.

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