



Child, teacher and preschool characteristics and child-teacher relationships in Greek preschools

Mirna Šumatić^{a,*}, Lars-Erik Malmberg^a, Athanasios Gregoriadis^b, Vasilis Grammatikopoulos^c, Evridiki Zachopoulou^c

^a University of Oxford, UK

^b Aristotle University of Thessaloniki, Greece

^c International Hellenic University, Greece

ARTICLE INFO

Keywords:

Preschool
Child-teacher relationship
Exploratory structural equation model
Classroom quality

ABSTRACT

Three dimensions of child–teacher relationships (derived from the Student-Teacher Relationship Scale) *closeness*, *conflict* and *dependency* have been conceptualized and investigated. In individualistic cultures a close relationship has been associated with children’s academic performance and behavioural adjustment, conflictual relationships have been associated with maladjustment and externalising behaviours, and the dependency dimension has been negatively associated with closeness. We expand previous studies by first investigating the factor structure of the STRs amongst 2,130 preschool children and their 267 teachers in a collectivistic culture, Greece. Second, we investigated effects of *child* (gender, age, country of origin and special educational needs), *teacher* (teacher gender, age and affective well-being), and *preschool characteristics* (school-type, number of children, observed quality using the Early Childhood Environment Rating Scale-Revised (ECERS-R), on STRS.

Using exploratory structural equation modelling (ESEM) adjusting for differences between preschools we replicated the three-factor solution of the STRS. Consistent with previous studies in collectivistic cultures, closeness and dependency were positively (not negatively) associated. Children’s gender and teachers’ affective well-being were found to be consistently associated with all three dimensions of the STRS. In conclusion, the STRS can capture the relationship accurately in a Greek early years setting, and the analysis has demonstrated that the three STRS dimensions are associated with different child and teacher characteristics.

1. Introduction

Apart from the parent–child relationships, the quality of the child–teacher relationship is important for children’s social and emotional development (Pianta & Stuhlman, 2004). Meta-analytic findings, ranging from preschool to secondary school, have shown significant associations amongst positive child–teacher relationships and children’s engagement ($r=0.39$) and achievement ($r=0.16$) (Roorda, Koomen, Spilt, & Oort, 2011), as well as positive attitude towards school (Hamre, Hatfield, Pianta, & Jamil, 2014), school readiness and positive social-emotional developmental outcomes (Baker, 2006). Every teacher and every child bring their own previous experiences and individual characteristics to their interactions and the subsequent relationship (Davis, 2003). In the present study we expand previous studies on child–teacher relationships in two ways. While the structure of the *Student-Teacher Relationship Scale* (Pianta, 2001) has been replicated in various collectivistic cultures, e.g., Turkey (Beyazkurk & Kesner, 2005), Portugal

(Ferreira, Cadima, Matias, Leal, & Matos, 2020) and Italy (Fraire, Longobardi, Prino, & Sclavo, 2013) as well as Greece (Tsigilis, Gregoriadis, & Grammatikopoulos, 2018a,b; Gregoriadis & Tsigilis, 2008), the present analysis, firstly, goes beyond the previous literature to examine whether the 3-factor structure is replicated when taking into account the hierarchical nature of the data; children nested in preschools. Secondly, as the child–teacher relationship depends on characteristics of children, teachers, and preschools, we investigated how child characteristics, teacher characteristics and classroom characteristics (see Fig. 2) were associated with closeness, conflict and dependency in child–teacher relationships. Doing so we contribute to the growing literature on effects of preschool on children’s relationships with their teachers. We contextualize the findings to known collectivistic features of the Greek culture (Gregoriadis & Tsigilis, 2008; Gregoriadis, Grammatikopoulos, Tsigilis, & Verschueren, 2021; Tsigilis, Gregoriadis, & Grammatikopoulos, 2018a,b).

* Corresponding author at: Department of Education, University of Oxford, 15 Norham Gardens, OX2 6PY, Oxford, UK.
E-mail address: mirna.sumatic@education.ox.ac.uk (M. Šumatić).

1.1. Nature of the child–teacher relationship

The present study is theoretically framed within the attachment theory framework. Early work from attachment theory provides a theoretical basis for demonstrating how children’s working models of their environment are a product of their experiences with adults and caregivers (Bowlby, 1982). This conceptualization remains relevant across cultural contexts and is relevant for the age group that is the focus of the present study. Furthermore, the *Student–Teacher Relationship Scale* instrument was developed based on attachment theory and acknowledges the importance of interactions in forming children’s representational models.

A teacher’s role in the classroom encompasses not only the teaching of academic content but also communication skills, facilitating peer relations and regulating behaviour (Gregoriadis et al., 2021). What makes the relationship between child and teacher different to that of the child and primary caregiver is that the former is not exclusive or durable and is more prone to change (Verschueren & Koomen, 2012). A teacher, nevertheless, takes on the role of an attachment figure, albeit a temporary one (Verschueren & Koomen, 2012), therefore, attachment theory remains relevant to the educational context of the child–teacher relationship. The early childhood educational context is distinguished from primary school education in that the role of the teacher is more pronounced in the former context, and considered more crucial for the development of communication skills and self-regulation amongst others (Roorda, Koomen, Thijs, & Oort, 2013).

The *Student–Teacher Relationship Scale* (STRS) (Pianta, 2001) has been a widely used measure of child–teacher relationships in the classroom. The term “student–teacher” is used when referring to the STRS measure, and we use the term “child–teacher” throughout to refer to the central concept of the paper, largely due to the preschool sample of the study. Originally developed by Pianta (2001), the STRS comprises three constructs, closeness, conflict and dependency. The closeness construct was considered to capture a relationship marked by warmth and affection and effective communication between the child and teacher (Pianta & Steinberg, 1992). This positive aspect of the relationship is thought to engage children’s positive attitudes and engagement toward school and aid in children’s socioemotional development (Webb, young, & Neuarth-Pritchett, 2011). In an Italian sample, Semeraro, Giofre, Coppola, Lucangeli, and Cassibba (2020) found that higher quality child–teacher relationships were indirectly associated with mathematics achievement. This was mediated through mathematics anxiety, suggesting that a positive child–teacher relationship can enable students’ emotional self-regulation. Contrarily, conflict is considered the negative form this relationship can take, manifested through inharmonious interactions. Conflictual relationships leading to more aggressive or externalizing behaviour has been identified in both US/Western European contexts and others (e.g., Sette et al., 2016 in Italy). The dependency subscale is intended to measure children’s possessive and clingy nature, which is thought to manifest in children being hesitant and tentative in their social interactions with others (Webb et al., 2011). It is suggested that an overreliance on the teacher lessens children’s autonomy leading to higher conflict and less close relationships (Roorda, Zee, & Koomen, 2020). Meta-analytic findings have indicated that a strong association exists between dependency and externalizing behaviour ($r=0.27$) (Roorda et al., 2020) similar to that of conflict and externalizing behaviour. But dependency remains the subscale with the most mixed results in the literature when other predictors are concerned, partly due to the negative conceptualisation of this construct (Pianta, 2001). This subscale is often adapted, combined with the conflict subscale, or disregarded in research.

In the following section we draw on previous studies in two ways: First, we present findings from previous single-country and cross-cultural studies with regard to effects of child, teacher and classroom on the child–teacher relationship. Second, we (as others e.g., Cadima, Doumen, Verschueren, & Leal, 2015; Fraire et al., 2013; Gregoriadis et al., 2021) use the distinction between individualistic and collectivistic

cultures for framing previous positive associations between closeness and dependency found in collectivistic cultures.

1.2. Child and classroom effects on child–teacher relationships

1.2.1. Child characteristics

Individual child characteristics have been found to play a role in affecting the quality of the child–teacher relationship. One such factor is gender. Studies have found that teachers report higher conflict and lower closeness with boys (Koepeke & Harkins, 2008; McFarland, Murray, & Phillipson, 2016), reflecting that teachers’ interactions with boys differ compared to girls, where more autonomy is encouraged for boys and less so for girls. Contrarily, girls are found to have more positive perceptions of their teachers (McFarland et al., 2016), potentially contributing to their more positive relationships. Hamre and Pianta (2001) found conflict in boys was significantly and negatively correlated with maths and language outcomes in lower elementary ($r = -0.29$), upper elementary ($r = -0.26$) and middle school ($r = -0.22$). They found that relational negativity, measured using a composite score of conflict and dependency between child and teacher, accounted for a small but significant proportion of variance ($R^2=0.03$) in academic outcomes in early elementary school (Hamre & Pianta, 2001). Glüer and Gregoriadis (2017) found girls to be rated higher in closeness than boys but found no effects for conflict and dependency. However, examining a culturally similar setting to Greece, in an Italian sample, Quaglia, Gastaldi, Prino, Pasta, and Longobardi (2013) found that female teachers specifically, rated their relationships with children differently based on their gender. They found female teachers rated their relationship with boys as being higher in conflict, lower in closeness and lower in dependency, while no significant effects were found for male teachers. Contrarily, a study comparing the STRS between a Belgian and Portuguese sample, found that teachers in Portugal did not rate boys and girls differently in closeness or conflict, whereas differences were observed in the Belgian sample (Cadima et al., 2015). A further study on a Greek sample found boys to be rated higher in conflict and lower in closeness and dependency (Gregoriadis & Tsigilis, 2008). As there appears to be some variability in these findings, we found it important to further examine the effect gender had on the child–teacher relationship in our Greek sample.

A further characteristic that has been found to affect the quality of relationships in classrooms and that is worth investigating is special educational needs (SEN) (Zee, de Bree, Hakvoort, & Koomen, 2020). Children with learning, behavioural and/or social-emotional difficulties are prone to experiencing the negative stereotypes associated with such labels, and an increasing number of studies are finding this to impact teachers’ behaviour in the classroom (Hornstra, Denessen, Bakker, van den Bergh, & Voeten, 2010; Zee et al., 2020). Zee et al. (2020) found that behavioural disorders, like ADHD or Autism Spectrum Disorder, contributed to teachers’ negative perceptions of their relationship with children with SEN, specifically higher levels of conflict and lower levels of closeness. However, this study excluded the dependency questions from the STRS. In a more culturally similar setting to Greece, Freire, Pipa, Aguiar, da Silva, and Moreira (2020) found that Portuguese teachers also reported using the STRS lower closeness and higher conflict with children with SEN. However, these studies (Freire et al., 2020; Hornstra et al., 2010; Zee et al., 2020) used samples from primary and upper primary school years therefore, including a younger sample is important. They also did not include the dependency subscale of the STRS. A study from Turkey did include the dependency subscale and found no significant difference between children with and without SEN in their dependency ratings, but teachers’ ratings of relationship quality with children with SEN were significantly lower in closeness and higher in conflict (Demirkaya & Bakkaloglu, 2015). Teachers’ perceptions of SEN in Greece appear to be supportive of inclusion within the classroom, with younger teachers being more supportive than older teachers. However, the level of support was dependant on the type of disability the children had (Pappas, Papoutsis, & Drigas, 2018). However, teachers’

willingness to be open to inclusion of children with SEN in the classroom does not automatically imply that they possess the necessary skills to effectively support the children or that they are able to establish close relationships with them. SEN discrimination can follow children as they progress through school whether it is due to lack of equipment, lack of teacher training and awareness or lack of financial assistance for teachers in Greece (Pappas, Papoutsis, & Drigas, 2018). However, if teachers can foster a positive relationship with children with SEN this can perhaps mitigate some negative future outcomes also emphasising the need for effective policies to facilitate this.

A further factor that we thought was important to investigate was children's country of origin. While the sample that we were looking to conduct our analysis on was majority Greek, we nevertheless considered it an important variable to include in the analysis. Previous literature from the USA (Neuhaus, McCormick, & O'Connor, 2020) and Europe (Thijs, Westhof, & Koomen, 2012) has suggested that ethnic minority students are more likely to have higher dependency in their interactions with their teachers. In the Greek setting it has been suggested that Greek teachers take an assimilative approach to teaching and look to children's individuality in terms of personality and classroom behaviour, and do not always take into account their ethno-cultural background (Papadopoulou, Theodosiadou, & Palaiologou, 2020). With this context, we included country of origin in our analysis in order to investigate whether the child–teacher relationship differed between Greek and non-Greek children in our sample.

Children's age was also included in our analysis as it is argued that the predictive ability of all three constructs of the STRS is dependant on the age and developmental stage of the child with stronger predictive ability in the younger years (Ang, 2005). Younger children are also likely to exhibit more dependency-like behaviour, all of which is also in line with the Attachment framework within which the STRS measure was developed.

1.2.2. Teacher characteristics

As individual characteristics of children affect their relationships, so do the individual teacher characteristics. Teachers' gender is a factor that has been investigated across the literature with mixed results. Some studies have found that male and female teachers differentially rate their relationships with boys and girls (Quaglia et al., 2013). Teachers' experience is also a factor that has been previously investigated, suggesting that teachers with more professional experience are able to maintain positive relationships across time (O'Connor, 2010) and are rated as having less conflictual relationships with children. One study conducted in Italy demonstrated that teachers' experience was negatively correlated with conflict ($r = -0.12$) and positively correlated with closeness ($r = 0.13$) (Quaglia et al., 2013). This might be due to more experienced teachers having the ability to effectively manage children with higher externalising behaviour, which can result in conflict.

Teachers' affective well-being is also an individual characteristic that can play a role in the perception of the child–teacher relationship. More specifically, teachers who are stressed or emotionally exhausted are likely to have more conflictual relationships with their students (Corbin, Alamos, Lowenstein, Downer, & Brown, 2019). In terms of the relational schema, a stressed teacher demonstrating negative affect in the classroom will elicit less close relationships with their students (Corbin et al., 2019). While Mantzicopoulos (2005) found workload stress to be particularly related to conflict between kindergarten children and teachers, the positive emotions should also be examined. We are interested in examining whether this is also evident in pre-primary education, and how the different elements of relationship quality are related to teachers' positive and negative feelings.

1.2.3. Classroom characteristics

Children's interpersonal relationships are integral aspects of the classroom environment which constitutes instructional practices and social-emotional factors (Moen, Sheridan, Schumacher, & Cheng, 2019;

O'Connor, 2010; Wang & Degol, 2016). Classroom climate or classroom environment quality is a multidimensional construct that has been measured using various instruments across the literature, but one that can influence a range of child outcomes, including the child–teacher relationship (Grazia & Molinari, 2021; Wang & Degol, 2016). More specifically, a supportive classroom climate being associated with a warmer relationship between the child and teacher (Ahnert, Harwardt-Heinecke, Kappler, Eckstein-Madry, & Milatz, 2012). A positive classroom climate enables more positive interactions between children and their teacher, where elements of structure and overall effective teaching practices are conducive to such outcomes (Mantzicopoulos, 2005; Mashburn et al., 2008). Using the Classroom Assessment Scoring System-PreK (CLASS-PreK), Moen et al. (2019) found that emotional support aspects of the classroom climate predicted significant increases in closeness between children and teachers across one school year, while classroom organization and instructional support did not predict closeness or conflict. However, in another longitudinal study, O'Connor (2010) suggested that classrooms with better management resulted in higher quality child–teacher relationships over time. Therefore, we found it important to examine whether overall classroom quality, as measured by the Early Childhood Environment Rating Scale (Revised) (ECERS-R) would predict the child–teacher relationship, as it includes aspects of classroom interactions and program structure. Mayer and Bechh (2016) in their analysis of the validity of the ECERS-R did not find it to be significantly associated with the STRS. However, studies directly examining the association between the STRS and the ECERS-R are scarce, therefore, we believe it to be an important factor to examine in the present analysis.

1.2.4. Collectivistic features of Greek culture

As the present study used data from a Greek educational context it is important to acknowledge the specific cultural aspects that provide a unique component to the analysis. Western cultures are characterised as individualistic, placing importance on individual independence within the in-group which in turn influences behaviour (Triandis, 2001). In contrast broadly east and south Asian countries are considered collectivistic, meaning that individuals within these societies are guided by the group norms of their in-group, and interdependence between individuals is favourable (Triandis, 2001). Individualism and collectivism differ based on individuals' relations with others (Oyserman & Lee, 2008), therefore, the way teachers and children form relationships in the classroom has in previous studies found to vary.

The dependency subscale appears to vary in whether it is regarded as a positive or negative attribute of the child–teacher relationship; with negative connotations in the USA and generally individualistic countries (e.g. Glüer & Gregoriadis, 2017), and positively interpreted in many collectivistic and collectivistic-leaning countries through positive correlations between dependency and closeness (e.g., Italy ($r = 0.11$) (Fraire et al., 2013), Portugal ($r = 0.27$) (Ferreira et al., 2020) and Iran ($r = 0.57$) (Vahidi, Ghanbari, Koomen, Zardkhane, & Zee, 2022). However, worth noting that in the Italian and Portuguese samples dependency and conflict were also positively correlated ($r = 0.33$; $r = 0.29$, respectively). The same pattern has been found when children's perceptions of the child–teacher relationship are measured, suggesting that the cultural effects start to play a role at an early age (Vatou, Gregoriadis, Tsigilis, & Grammatikopoulos, 2020). This indicates that the dependency construct is highly culturally sensitive and not culturally universal as many of the measure's underlying assumptions would suggest (Gregoriadis et al., 2021).

Greece is also considered relatively low on the individualism scale. In today's context it could be said that Greece, similar to its Mediterranean counterparts, is semi-collectivistic leaning towards individualism (Gregoriadis et al., 2021). Multiple studies in the Greek context have found positive associations between closeness and dependency (Gregoriadis & Tsigilis, 2008; Tsigilis, Gregoriadis, & Grammatikopoulos, 2018a,b). Gregoriadis and Tsigilis (2008) found that a 26-item factor solution using EFA was most appropriate, and in line with findings from

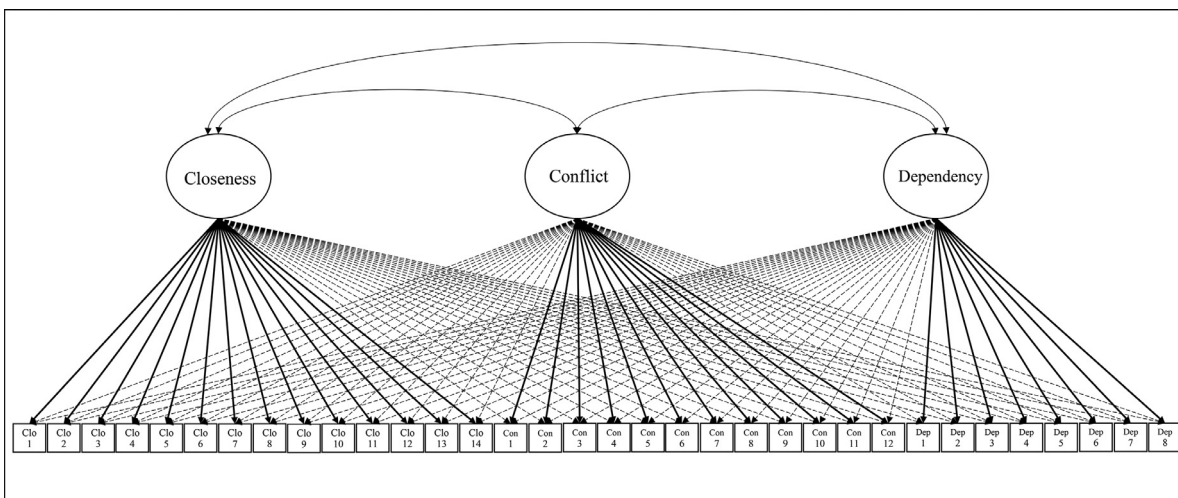


Fig. 1. Simplified representation of the exploratory structural equation model (ESEM) which was specified to include three latent constructs (closeness, conflict and dependency) with all items loading on all constructs. The *a priori* three-factor structure was defined using the target factor procedure. Bold arrows represent construct-relevant factor loadings and dashed arrows represent cross-loadings.

Italy, dependency was negatively correlated with conflict, and positively correlated with closeness ($r=0.34$). Here too, the dependency subscale showed the lowest reliability compared to closeness and conflict. Two consecutive studies took different statistical approaches, first Tsigilis, Gregoriadis and Grammatikopoulos (2018a) conducted both an EFA and CFA and found contradicting results, therefore they opted for an item parcelling approach which successfully demonstrated the expected 3-factor structure of the STRS. A further approach using exploratory structural equation modelling (ESEM) attempted to overcome the shortcomings of EFA and CFA approaches (Tsigilis, Gregoriadis, Grammatikopoulos, & Zachopoulou, 2018b). The results indicated that an ESEM approach was acceptable for studying the STRS. This finding was also found to be consistent in the Greek setting when taking into account children’s perceptions of the relationship (Gregoriadis et al., 2021) The consistent finding between these studies is the positive correlations between closeness and dependency, which is a finding that we expect to find in our study too.

1.3. Early education and care in Greece

In Greece, early childhood education is distinguished between kindergartens and childcare centres. Kindergartens cater to children between the ages of four and six, and attendance is mandatory (Gregoriadis, Tsigilis, Grammatikopoulos, & Kouli, 2016). Childcare centres offer services between the ages of two and a half and four and differ in that they do not have a national curriculum and are governed by the Ministry of Interior Affairs or the Ministry of Health and Welfare (European Commission, 2021). Kindergartens, follow a national curriculum and are governed by the Ministry of Education (Grammatikopoulos, Gregoriadis, Tsigilis, & Zachopoulou, 2012). The National Early Childhood Curriculum was implemented in Greece in 2003 to promote autonomy and self-esteem in children’s development (MoE/PI, 2002) and it is complemented by the Preschool Teacher Guide (Dafermou, Koulouri, & Basagianni, 2006) aimed to support teachers, to facilitate learning and promote the development of autonomy. The overall purpose of kindergartens is aiding children’s physical, emotional, cognitive and social development, and preparing children for primary school. The aims of childcare centres are more focused on children’s holistic development, implementing evidence-based practices, raising parents’ awareness of various pedagogical issues and aiding in the transition between home and a school-like environment (Schreyer & Oberhuemer, 2017). This includes an emphasis on comprehension and expression “particularly in the fields of language, mathematics and aesthetics.” (European Commis-

sion, 2021). This distinction is not central to the analysis but a contextual factor of Greek early childhood education, therefore, the sample used in the analysis included both kindergarten and childcare centres. For the purpose of clarity both kindergarten and childcare centres will be referred to as “preschools” throughout.

1.4. The current study

The two research aims of the analysis were to investigate (1) whether the 3-factor structure of the STRS, already established in previous literature, would replicate for preschool children in Greece and a secondary aim (2) was to investigate how child, teacher, and classroom factors predict the child–teacher relationship. Consistent with previous studies of the STRS, First, we use the individualism-collectivism distinction as a frame for understanding the positive association between closeness and dependency. Second, we use the description of Greece as a collectivistic culture as a frame of reference for interpretation of effects of child, teacher and classroom characteristics on STR.

Exploratory structural equation models (ESEM) were used for the *a priori* three-factor structure (see “Analytic Procedures”) as indicated in Fig 1 (i.e., all items load on all three constructs using the (a priori) target factor procedure) adjusting for differences between the preschools. Bold arrows indicate items loading on their target factor. As shown in Fig. 2, we modelled level-specific effects of predictors on all three latent constructs. We included the following child-characteristics (i.e., within-group level), children’s age, gender, special educational needs (SEN) and country of origin were used. We included the following predictors (i.e., between-group level) teacher characteristics: teachers’ gender, experience, and positive and negative feelings, as well as classroom characteristics: quality of classroom environment measures (the Early Childhood Environment Rating Scale (Revised) (ECERS-R), school-type and number of children in the preschool.

Schematic view, not all parameters indicated for clarity. We adjusted all estimates for differences between the preschools using the COMPLEX command in Mplus 8.7 (Muthén & Muthén, 2017-21).

2. Method

2.1. Data collection procedure

The sample from the present study was derived from the The Early-Q Thales project (2012–2015). Data were collected in 11 prefectures in

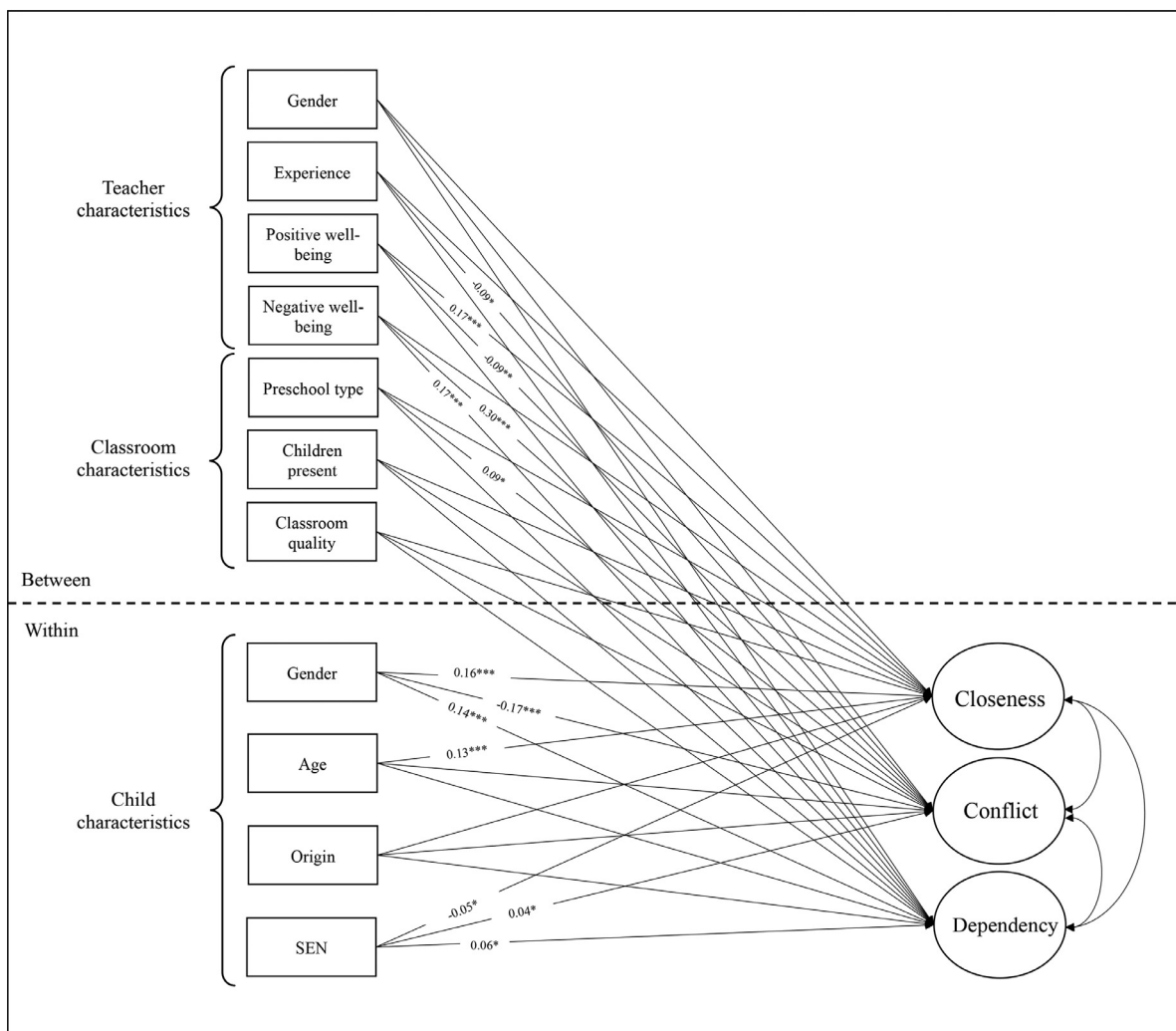


Fig. 2. Multivariate student–teacher relationship scale (STRS) dimensions (closeness, conflict, and dependency) predicted by child, teacher and classroom characteristics, adjusting for differences between preschools.

Greece,¹ and due to the sampling technique a nationally representative sample of Greece was obtained. More specifically the researchers randomly selected 25 kindergarten and childcare centres from every one of the 12 educational districts in Greece. Then one classroom from each kindergarten and childcare centre was randomly selected, as well as one teacher per classroom, hence the same number of classrooms and teachers. Furthermore, eight children were randomly selected by the researchers from each classroom, four boys and four girls. All the teachers completed the STRS questionnaires for the randomly selected children in their classrooms, as well as the brief a demographic and self-report questionnaire.

2.2. Sample

A subsample of 2130 children from 267 kindergarten and childcare centres was used for this study. Of this subsample, 519 children attended childcare centers and 1611 attended kindergartens. This was part of a larger study of 4261 children in 524 preschools (Tsigilis, Gregoriadis, & Grammatikopoulos, 2018a). Of this sample children’s average age was 5.15 (SD = 0.87), with 1011 girls (50.2%). Furthermore, 3284 (81.7%)

¹ Thessaloniki, Attiki, Serres, Larissa, Xanthi, Thesprotia, Chania (Crete), Irakleio (Crete), Kozani, Volos and Komotini.

children were of Greek origin, with the rest being labelled as foreign. Fifty-three children (1.3%) were regarded as having a special educational need (SEN). Teachers’ average age was 43.97 (SD=6.51) and their average years of experience was 17.26 years (SD=7.56), and average teaching years in the school from which the data was collected was 7.02 year (SD=6.35). The majority of the teachers were female, with 32 male teachers (1.5%) in the whole sample.

2.3. Measures

2.3.1. The student–teacher relationship scale

The Student–Teacher Relationship Scale is a teacher report of their perceived relationship with an individual child (Pianta, 2001). The revised scale used most widely in research today is the 28-item STRS and its corresponding three subscales, closeness, conflict and dependency. Answers to each question are rated on a scale of one to five, from *strongly agree* to *strongly disagree*. Koomen, Verschueren, van Schooten, Jak, and Pianta (2012) added six additional questions to the original 28-item scale. These six items (items 29 to 35) were used in the present study as well, and they included three items for the closeness subscale and three for dependency, see Table 1. The closeness scale consisted of 14 items (three items negatively worded), conflict of 12 items (all negatively worded), and dependency of eight items. Internal consistencies of a priori constructs in the raw (single-level) data were $\alpha = 0.83$. In

Table 1
Descriptive statistics for the Student–Teacher Relationship Scale.

Item	Mean	SD	Skew	Kurtosis	
1	I share an affectionate, warm relationship with this child (Clo 1)	4.27	.83	-1.09	1.03
2	This child and I always seem to be struggling with each other (Con 1)	1.37	.78	2.21	4.23
3	If upset, this child will seek comfort from me (Clo 2) [†]	3.59	1.14	-0.53	-0.48
4	This child is uncomfortable with physical affection or touch from me (Clo 3)	1.55	1.00	1.79	2.22
5	This child values his/her relationship with me (Clo 4) [†]	4.05	.92	-0.99	.99
6	This child appears hurt or embarrassed when I correct him/her (Dep 1)	2.80	1.29	.14	-1.05
7	When I praise this child, he/she beams with pride (Clo 5)	4.47	.78	-1.72	3.4
8	This child reacts strongly to separation from me (Dep 2)	1.54	.95	1.86	2.80
9	This child spontaneously shares information about himself/herself (Clo 6)	3.50	1.23	-0.54	-0.64
10	This child is overly dependant on me (Dep 3)	1.67	1.03	1.44	1.17
11	This child easily becomes angry with me (Con 2)	1.48	.91	1.99	3.39
12	This child tries to please me (Clo 7) [†]	3.13	1.25	-0.27	-0.91
13	This child feels that I treat him/her unfairly (Con 3)	1.34	.74	.74	6.76
14	This child asks for my help when he/she really does not need help (Dep 4)	1.98	1.16	.96	-0.11
15	It is easy to be in tune with what this child is feeling (Clo 8)	3.69	1.08	-0.86	.24
16	This child sees me as a source of punishment and criticism (Con 4)	1.26	.67	3.01	9.45
17	This child expresses hurt or jealousy when I spend time with other children (Dep 5)	1.75	1.03	1.26	.70
18	This child remains angry or is resistant after being disciplined (Con 5)	1.42	.89	2.32	4.76
19	When this child is misbehaving, he/she responds well to my look or tone of voice (Con 6)	3.80	1.21	-0.86	-0.16
20	Dealing with this child drains my energy (Con 7)	1.47	.94	2.04	3.33
21	I've noticed this child copying my behaviour or ways of doing things (Clo 9)	2.45	1.27	.36	-1.00
22	When this child is in a bad mood, I know we're in for a long and difficult day (Con 8)	1.55	0.99	1.93	3.08
23	This child's feelings toward me can be unpredictable or can change suddenly (Con 9)	1.45	.89	2.10	3.78
24	Despite my best efforts, I'm uncomfortable with how this child and I get along (Con 10)	1.43	.89	2.19	4.09
25	This child whines or cries when he/she wants something from me (Con 11)	1.51	.96	1.95	3.01
26	This child is sneaky or manipulative with me (Con 12)	1.66	1.00	1.52	1.50
27	This child openly shares his/her feelings and experiences with me (Clo 10)	3.48	1.14	-0.55	-0.42
28	My interactions with this child make me feel effective and confident (Clo 11)	3.93	.97	-0.82	.34
29	This child fixes his/her attention on me the whole day long (Dep 6) [*]	2.55	1.31	.25	-1.16
30	This child looks to me for help, appreciation and support (Dep 7) [*]	3.41	1.11	-0.39	-0.52
31	This child seems to be on his/her guard for me (Clo 12) ^{*,†}	2.04	1.21	.85	-0.42
32	This child allows himself/herself to be encouraged by me (Clo 13) [*]	3.96	.96	-0.91	.65
33	This child needs to be continually confirmed by me (Dep 8) [*]	2.98	1.25	-0.03	-0.99
34	This child seems to feel secure with me (Clo 14) [*]	4.41	.78	-1.46	2.51

Note: Clo = closeness, Con = conflict, Dep = dependency.

* = additional items added to original scale.

† =closeness items cross-loading onto the dependency construct.

comparison, previous Greek studies have reported values of closeness $\alpha = 0.86$, conflict $\alpha = 0.87$, dependency $\alpha = 0.79$ (Gregoriadis & Tsigilis, 2008), closeness McDonald's omega $\omega = 0.888$, conflict $\omega = 0.950$, dependency $\omega = 0.797$ (Tsigilis, Gregoriadis, Grammatikopoulos, & Zachopoulou, 2018b).

2.3.2. Teacher characteristics

Teachers completed the Affective Well-being questionnaire (Warr, 1990) regarding their affect, which globally captured their positive and negative well-being. A total of 12 questions were asked and framed as “In the past few weeks how often have you felt...”, these were scored on a scale of one to five, from *never* to *very often*. The 12 questions were split to make the two variables denoting positive (calm, cheerful, enthusiastic, content, relaxed, optimistic) and negative well-being (tension, uneasy, worried, depressed, gloomy, miserable). This instrument was translated into Greek and has previously been shown to be reliable ($\alpha=.865$) for measuring well-being (Koutiva, 2019). In our sample internal consistencies were $\alpha = 0.81$ for positive and $\alpha = .74$ for negative well-being. In the paper we refer to this measure as “teacher affective well-being”.

2.3.3. ECERS-R

While no direct measure of climate is available in the dataset for the present analysis, an observational measure of the quality of the classroom environment was used as well as teachers' positive and negative well-being which can be seen as proxy measures of climate. The Early Childhood Environment Rating Scale (Revised), referred to as the ECERS-R (Harms, Clifford, & Cryer, 1998), is a widely used and robust measure of early years education quality. Such an observational

measure provides an additional objective element to the study. It includes a subscale intended to measure the caregiver–child interactions (Perlman, Zellman, & Le, 2004). Data was collected by 12 highly experienced school counsellors who attended four days of training by experienced ECERS trainers in order to adequately implement this observational tool in the classroom. Observational data was collected for one full day by each observer. Inter-rater agreement was calculated to be 89% one point agreement, 80% total agreement and 76% total indicator agreement, all of which were acceptable high scores. As the same 12 observers collected data in both types of classroom provision (preschool classrooms and kindergartens) the inter-rater agreement was calculated based on the full sample. The ECERS-R is an observational measurement tool, made up of 43 items and seven subscales. Each subscale includes multiple items that are related to the subscale, Space and Furnishings (e.g., indoor space), Personal Care Routines (e.g., greeting/departing), Language/Reasoning (e.g. encouraging children to communicate), Activities (e.g. dramatic play), Interaction (e.g. general supervision of children), Programme Structure (e.g. schedule), Movement and Play. Each item is scored one to seven, on a scale of inadequate to excellent, the observer is given a short description of what would be appropriate for each score. The ECERS-R captures both aspects of structural and process quality, with the former referring to substantial materials and activities in the classroom and the latter referring to the quality of language use and interaction (Cassidy, Hestenes, Hegde, Hestenes, & Mims, 2005). The ECERS-R is one of the longest standing measures of classroom quality and has been used in research and, policy and practice for over 40 years, during which its psychometric properties have been revised and improved upon (Hestenes et al., 2019) making it an appro-

appropriate scale for the use in the present study. With the ECERS-R being an observational tool, and one that requires training for the observers, it adds an element of objective measurement to the analysis. We also included the number of children registered in the particular teachers' class, and the type of preschool (0 = kindergarten 1 = childcare centre). In our sample internal consistency was $\alpha = 0.94$ for the total ECERS-R score.

2.3.4. Ethics

The original Early-Q Thales project received official ethical approval from Ministry of Education of Greece. Written consent was obtained from the directors of all the educational districts involved, as well as the principals and teachers in the kindergartens and childcare centres where data was collected, and parents of all children involved were given detailed information regarding the methodology and procedure of the project.

2.4. Analytic procedures

Given the skewed nature of the items (particularly in the conflict construct) we used the Weighted Least Square Mean Variance (WLSMV) estimator in Mplus 8.6 (Muthén and Muthén, 1998-2017). WLSMV uses the probit-link function, and estimates thresholds for each scale-step of each observed variable. As student–teacher relationship (STR) was inherently a person-level variable, and we posed predictors at the, within, child-level (child's age, gender, country of origin, and SEN) and at between level (teacher characteristics: gender, experience, positive and negative well-being and classroom characteristics: school-type, number of children present and classroom quality). As children were nested within preschools we adjusted standard errors for the clustering. This is an acceptable solution as we were interested in predicting the child-teacher relationships at the individual level, rather than the preschool teacher's average child-teacher relationship at the between-level (Barendse, & Rosseel, 2020).

Given the number of items per construct (14 for closeness, 12 for conflict, and 8 for dependency) and evidence of cross-loadings between factors in previous studies (e.g. Fraire et al., 2013; Pakarinen et al., 2018), but clearly a priori defined factor structure (Gregoriadis & Tsigilis, 2008; Tsigilis, Gregoriadis, & Grammatikopoulos, 2018a,b), we specified Exploratory Structural Equation Models using the target-rotation technique (ESEM; Asparouhov & Muthén, 2009; Morin & Asparouhov, 2018). This means that the model was specified so that all items were to load on all three latent constructs but targeted to load on their intended theoretical construct (i.e., items can load on non-target factors in addition to target-factors). Confirmatory Factor Analysis (CFA), in which non-target factor loadings are fixed to zero, would be unnecessarily restrictive. We adjusted standard errors in all models for differences between preschools using the COMPLEX command (Muthén & Muthén, 2017-21). Using cut-offs of <0.08 for acceptable and <0.05 for good fit on the Root Mean Square Error of Approximation (RMSEA) and Standardized Root Mean Square Residual (SRMR), and >0.90 for acceptable and >0.95 for the Comparative Fit Index (CFI), this 3-factor model fitted data reasonably well ($\chi^2_{[462]} = 2028.88$; $p < .001$; RMSEA = 0.041; CFI = 0.946; SRMR = 0.043).

Once we included teacher and classroom-level predictors into the model, we encountered convergence problems. These were due to the dichotomous variables SEN and teacher gender. When these were specified as endogenous variables (estimated as joint likelihood) in order to utilise the FIML estimation of missing datapoints, the sparseness (1.5% SEN, 1.5% male teachers) caused non-convergence. Instead of excluding cases, we imputed 10 datasets using the 2-level imputation in Mplus, and reran the three-construct model including (M1) child covariates, (M2) teacher and classroom covariates. These models fitted data well as reported below. (Also see Table 3 for correlations of all variables in the model).

3. Results

3.1. Structural validity of the STRS

To test the plausibility of the factor structure we compared the a priori three-factor solution ($\chi^2_{[462]} = 2040.40$; $p < .001$; RMSEA = 0.040; CFI = 0.946; SRMR = 0.038), against a one-factor solution (i.e., all items loading on a single child-teacher relationship factor) which fitted data poorly ($\chi^2_{[527]} = 12131.18$; $p < .001$; RMSEA = 0.102; CFI = 0.601; SRMR = 0.173). Table 2 shows the factor loadings of all the STRS items on the three STRS dimensions. We found a correlation of $r = 0.35$ between closeness and dependency, a similar negative correlation between closeness and conflict ($r = -0.37$) and a small but positive correlation between conflict and dependency ($r = 0.08$).

3.2. Child, teacher, and classroom predictors

3.2.1. Child characteristics

At the within-level children's gender and SEN status were significant predictors of all the STRS dimensions. Teachers perceived relationships with girls as closer ($\beta = 0.16$), less conflictual ($\beta = -0.17$), and more dependant ($\beta = 0.14$) when only within level predictors were entered into the model ($\chi^2_{[586]} = 2205.42$; RMSEA = 0.036; CFI = 0.946; SRMR = 0.048). Teachers experienced closer relationships with older children ($\beta = 0.13$), but age was not associated with conflict or dependency. Teachers experienced closer relationships with Greek children than with children of other origin, however this effect was not

Table 2
Factor structure of the STRS.

Item	Student–Teacher Relationship Scale Factors		
	Closeness	Dependency	Conflict
Clo 1	0.55	0.10	-0.33
Clo 2	0.47	0.33	0.00
Clo 3	-0.44	0.16	0.22
Clo 4	0.57	0.25	-0.22
Clo 5	0.49	0.22	-0.12
Clo 6	0.96	-0.42	0.42
Clo 7	0.33	0.38	-0.21
Clo 8	0.70	-0.16	-0.01
Clo 9	0.31	0.32	0.02
Clo 10	0.97	-0.27	0.24
Clo 11	0.61	-0.01	-0.34
Clo 12	0.41	0.41	0.06
Clo 13	0.46	0.32	-0.09
Clo 14	0.56	0.14	-0.28
Con 1	-0.04	-0.12	0.86
Con 2	0.03	0.14	0.78
Con 3	-0.02	0.16	0.73
Con 4	-0.08	0.05	0.73
Con 5	0.04	-0.08	0.91
Con 6	0.16	0.12	-0.46
Con 7	-0.04	-0.10	0.91
Con 8	0.02	0.13	0.80
Con 9	-0.22	0.25	0.70
Con 10	-0.36	0.18	0.67
Con 11	0.08	0.34	0.61
Con 12	0.02	-0.05	0.76
Dep 1	-0.05	0.47	-0.01
Dep 2	0.09	0.65	0.17
Dep 3	0.07	0.72	0.11
Dep 4	0.01	0.59	0.20
Dep 5	0.19	0.44	0.44
Dep 6	0.25	0.54	-0.07
Dep 7	0.38	0.49	0.00
Dep 8	0.09	0.65	0.13
<i>Factor Correlations</i>			
Dependency	0.35		
Conflict	-0.37	0.08	

Note: Parameter estimates from Mplus 8.6 (standardized solution).

Table 3
Correlations and Descriptive statistics.

	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
1 Child gender (male=0, female=1)	1															
2 Child age	.01	1														
3 Child's country of origin (foreign=0, Greek=1)	-0.00	-0.17**	1													
4 SEN (no=0, yes=1)	-0.06*	.09**	-0.02	1												
5 Closeness	.19**	.08**	.03	-0.05*	1											
6 Conflict	-0.14**	-0.06*	.01	.05*	.46**	1										
7 Dependency	.09**	-0.12**	.01	.03	.46**	.13**	1									
8 School type (kindergarten=0, childcare=1)	-0.01	-0.70**	.21**	-0.02	-0.02	.08**	.13**	1								
9 ECGERS	-0.00	.25**	.00	.05*	.04	-0.11**	-0.17**	-0.25**	1							
10 Teacher gender (male=0, female=1)	.01	-0.01	.04	.015	-0.01	.01	.02	.07*	-0.06*	1						
11 Teacher experience (years)	-0.01	.00	.04	.019	.05	-0.05*	.08**	.04	-0.08**	.06*	1					
12 Positive well-being	-0.00	.07*	.05*	-0.01	.17**	-0.13**	-0.01	-0.03	.15**	.01	-0.05*	1				
13 Negative well-being	-0.01	.01	-0.13**	-0.01	-0.05*	.17**	.12**	-0.08**	-0.19**	-0.00	.03	-0.39**	1			
14 Registered children	.01	.02	.06*	-0.01	-0.03	.03	.07*	.09**	-0.26**	.13**	-0.07*	.06*	.06*	1		
15 Children present	.01	.218**	.08**	.019	-0.05*	-0.01	-0.01	-0.19**	-0.07*	.12**	-0.02	.05*	.01	.78**	1	
16 Children per nursery	-0.01	-0.00	.04*	.01	-0.03	.01	.02	.02	-0.03	-0.01	.05*	-0.11**	.11**	.12**	.07*	1
<i>Descriptive statistics</i>																
Mean/%		5.14			3.67	1.51	2.34		4.75		17.21	3.90	1.74	19.44	16.21	7.98
SD		.87			.62	.63	.72		.96		7.62	.62	.54	4.76	4.62	.22
Min.		3			1	1	1		1		3	1	1	6	5	6
Max		7			5	5	5		7		34	5	5	40	36	9
n=0			380	1976				1611		32						
N	1056	2093	2036	2005	2130	2130	2130	2,13	2130	2122	2122	2130	2130	2091	2083	2130

evident when the between-level predictors were added to the model ($\chi^2_{[803]} = 2098.34$; RMSEA = 0.028; CFI = 0.958; SRMR = 0.087). With regard to children with SEN, teachers experienced less close ($\beta=-0.05$), more conflictual ($\beta=0.04$) and more dependant ($\beta=0.06$) relationships with these.

3.2.2. Teacher and classroom characteristics

Amongst the teacher characteristics, teachers' gender was not a significant predictor of the STRS. Teachers' experience was associated with conflict, with more experienced teachers rating their relationships with children less conflictual ($\beta=-0.09$). Positive well-being was associated with close relationships ($\beta=0.17$) and negatively associated with conflict ($\beta=-0.09$), and not associated with dependency. Teachers' negative well-being was significantly associated with more conflictual ($\beta=0.30$) and dependency relationships ($\beta=0.17$) and no association was found with closeness. Of the classroom characteristics only school-type was found to predict conflict, with higher conflict in childcare centres compared to kindergartens ($\beta=0.09$). Classroom predictors were not found to be significantly associated with the STRS, including the number of children in class or classroom quality as measured by the ECERS-R.

4. Discussion

The aims of the study were to first replicate the factor-structure of the child–teacher relationship controlling for between-preschool differences, and second to investigate the effects of child, teacher, and classroom characteristics on the child–teacher relationship. Doing so we contributed to the growing literature on child–teacher relationships and its predictors in collectivistic cultures. A three-factor solution fitted data acceptably also when adjusting for differences between preschools. Similar to other collectivistic cultures (Fraire et al., 2013; Freire et al., 2020; Vahidi et al., 2022), and previous Greek samples, we replicated the positive (not negative) association between closeness and dependency. We then regressed STRS on child, teacher and classroom characteristics, adjusting for the clustering. Children's gender, age and SEN were significant predictors of at least one of the STRS subscales, whilst at the between level teachers' teacher experience, positive and negative well-being and school type were significant predictors of at least one STRS dimension. We discuss these findings further by first considering the three STRS subscales and their interpretation within the Greek context. We then discuss the effects of child characteristics on the child–teacher relationship followed by teacher characteristics and classroom quality. We also discuss the strengths and limitations of the study and potential directions for future research to expand on our findings.

4.1. Closeness, conflict and dependency associations

Consistent with findings in other collectivistic cultures, Turkey (Beyazkurk & Kesner, 2005), Portugal (Ferreira et al., 2020), Italy (Fraire et al., 2013), Iran (Vahidi et al., 2022), we found a positive association between closeness and dependency. Consistent with (Tsigilis, Gregoriadis, Grammatikopoulos, & Zachopoulou, 2018b) we, using our modelling strategy, also found closeness and dependency are two distinct constructs. While closeness is generally regarded as a positive characteristic and conflict a negative characteristic, dependency is subject to cultural effects in its interpretation (Gregoriadis et al., 2021; Roorda et al., 2020; Rudasill, 2021). As Pianta (2001) theoretically framed dependency as a negative construct in the Western individualistic perspective, where children exhibiting dependant behaviour is deemed socially undesirable behaviour, it is no surprise that its interpretation will differ culturally. Dependency is framed in a negative context due to its positive relation to conflict in much of the previous literature, and often being interpreted as clingy behaviour marked by a lack of autonomy. In the STRS User Manual high dependency scores suggest that the "...student reacts strongly to separation from the teacher, requests help when

not needed, and consequently the teacher is concerned about the student's overreliance". But this interpretation is a value judgement, and it is possible for a teacher to not be concerned with a student's overreliance. This further demonstrates that dependency is more open to interpretation than closeness and conflict.

Triandis and Gelfand (1998) suggest that collectivist cultures contain an element of interdependence, whereby members of the ingroup have vested interests in others of the same ingroup which is seen through mutual reliance or sharing of resources, which indirectly requires relational closeness and proximity. Whereas individualistic cultures highlight, and reward self-reliance and independence (Triandis, 1989) and collectivistic cultures highlight and reward interdependence. This interdependence can potentially emphasise the helplessness aspect of dependency, specifically in children, leading to adults offering more emotional proximity hence contributing to a more close relationship (Gregoriadis et al., 2021). This lens offers one possible explanation as to why closeness and dependency are found to be positively correlated. Interdependence assumes that it is not only the child that is expressing the dependent behaviour but that the teacher also plays an active part in supporting this behaviour.

A recent meta-analysis by Roorda et al. (2020) investigated dependency and its association with school adjustment from 28 studies. They found dependency to be a valid dimension across studies, however, compared to closeness and conflict relatively few studies have used dependency to investigate associations. The authors also concluded that dependency was a negative characteristic of the child–teacher relationship, where it was found that dependency was a significant predictor of externalising behaviour. Therefore, our inclusion of the dependency construct in the present study is valid and further suggests that dependency is not necessarily a globally negative construct.

It is possible that the reason for the conflict scale being the most robust factor (strongest factor loadings, and minimal cross-loadings) and one that is consistent across the literature, is due to the ease of capturing this construct through the STRS questions. The STRS conflict items are clear in demonstrating a teacher's negative perception of the relationship by referring to children's anger but also includes questions which require a teacher's inference like "This child feels that I treat him/her unfairly". Conflict was the factor with the highest factor loadings from the ESEM analysis. Conflict in the child–teacher relationship can have lasting detrimental effects on children's social and cognitive development (Koepke & Harkins, 2008). Higher conflict has also subsequently been linked to lower academic achievement and poorer peer relations (Koepke & Harkins, 2008; Verschuere & Koomen, 2012). Meaning that conflict as a construct is well captured using the STRS also in a Greek cultural setting and likely has equally detrimental long-term consequences that need attention.

It is helpful for findings to be contextualised according to some known sociocultural features (collectivism/individualism), which are assumed to exert some influence on the child–teacher relationship, even if such a theoretical proposition is at times narrow and should not be viewed as opposing or dichotomous but instead simultaneously present in a culture but emphasised in different contexts (Triandis, 2001). However, the studies investigating the child–teacher relationship, including the present one, do not include measures of cultural context or culturally informed childrearing norms, from teachers or parents which is a substantial limitation to this research.

4.2. The child–teacher relationship and child-characteristics

Gender was a significant predictor of closeness, conflict and dependency, with girls having higher closeness and dependency ratings and lower conflict. This is in line with the wider literature (Glüer & Gregoriadis, 2017; McFarland et al., 2016; Quaglia et al., 2013) which posits that gender role socialisation plays an important part from the early years in children's navigation of social relationships and that girls, es-

pecially, are socialized to be more socially responsive which can present in the form of closeness and dependency (Roorda et al., 2020).

The finding that boys were more likely to have a more conflictual relationship with their teacher is supported by multiple previous studies with boys consistently showing higher levels of externalising behaviour at all ages, and signs of early conflictual behaviour have been found to be predictors of future conflictual behaviour as well (Glüer & Gregoriadis, 2017; Hamre & Pianta, 2001; Koepke & Harkins, 2008;). Boys are perhaps socialised from a young age to 'individuate' which could manifest in conflictual behaviour as a way for boys to establish autonomy (Koepke & Harkins, 2008). Therefore, boys and girls deal with and respond to stress and conflict differently, where girls are drawn to teachers for comfort and security, notably female teachers (Koepke & Harkins, 2008). Subsequently how teachers respond to the children's attachment-related behaviours will also be culturally embedded (Cadima et al., 2015).

Teachers were found to rate their relationships with children with SEN higher in conflict, lower in closeness and higher in dependency than those without SEN. This finding is in line with previous research which suggests that whether implicitly or explicitly teachers perceptions of children with SEN has an effect on their relationship with the children in the classroom setting (Freire et al., 2020; Hornstra et al., 2010; Zee et al., 2020). Our results indicate that this is not exclusive to primary and secondary school-aged children but is also evident in the preschool years (Pappas et al., 2018). However, the analysis did not take into account the type of SEN (physical, social-emotional etc.). Teachers rating children with SEN higher in dependency and lower in closeness indicates that there is some link between SEN and the child–teacher relationship and how these children are perceived by their teachers. Freire et al. (2020) found that when children's social skills and problem behaviour was accounted for, SEN ceased to predict higher levels of conflict. Our results revealed that SEN significantly predicted higher dependency, in contrast to Demirkaya and Bakkaloglu (2015), who did not find any significant effects. However, despite its statistical significance, the effect was small ($\beta=[0.04-0.06]$, see Table 4), likely due to the small number of SEN children in the sample. It is likely that in the Greek setting, where provision of resources for teachers with children with SEN in their classes is still lacking (Pappas et al., 2018), teachers are not able to effectively establish close relationships with children with SEN. This is an effect than needs replication and more nuanced insight in future studies.

Children's country of origin was only significantly related to closeness, where Greek children were rated as having higher levels of closeness with their teachers compared to non-Greek children, in model M1, with only child-level predictors. This is contrary to some previous findings (Neuhaus et al., 2020; Thijs et al., 2012) which found dependency to be the construct that was significantly related to ethnicity. In the Netherlands Thijs et al. (2012) did not find differences in closeness ratings for ethnic Dutch and Moroccan-Dutch students. However, this is possibly also due to the cultural factor, where dependency is likely to have been interpreted differently in the Greek context compared to the two cited studies which were conducted in the USA and Netherlands. We also did not take into account the ethnic background of the non-Greek children in our analysis, something that could be done in future studies. Papadopoulou et al. (2020) suggest that Greek teachers make an effort not to differentiate between Greek and non-Greek students, and perhaps this assimilative educational approach of Greek teachers can explain the lack of effect of country of origin on the child–teacher relationship dimensions in our final model (M2) which included between-level predictors.

4.3. The child–teacher relationship and teacher characteristics

Teacher characteristics have more of an association with the child–teacher relationship than individual child characteristics. Teachers' affective well-being was significantly associated with conflict in the child–

Table 4
Results of models (M1 and M2) with the three STRS subscales (closeness, conflict, dependency).

	Closeness		Conflict		Dependency	
	M1	M2	M1	M2	M1	M2
	β	p	β	p	β	p
<i>Teacher Characteristics</i>						
Gender (male=0, female=1)		-0.01		0.02		-0.02
Teacher experience (years)		0.06		-0.09 *		0.06
Positive well-being		0.17 ***		-0.09 **		0.09
Negative well-being		-0.02		0.30 ***		0.17 ***
<i>Classroom Characteristics</i>						
School type (kindergarten=0, childcare=1)		0.07		0.09 *		0.08
Number of children present		-0.02		0.00		0.00
Classroom quality (ECERS)		0.02		-0.06		-0.07
<i>Child Characteristics</i>						
Gender (male=0, female=1)	0.16 ***	0.16 ***	-0.17 ***	-0.17 ***	0.14 ***	0.14 ***
Age	0.10 **	0.13 ***	-0.07 *	0.02	-0.13 ***	-0.07
Country of origin (foreign=0, Greek=1)	0.06 *	0.04	0.01	0.03	-0.01	-0.00
SEN (no=0, yes=1)	-0.04	-0.05 *	0.04	0.04 *	0.06 *	0.06 *
R ²	0.0038	0.08	0.04	0.08	0.04	0.10

Note: All values are standardised.

- * $p < .05$;
- ** $p < .01$;
- *** $p < .001$

teacher relationship. Specifically, positive well-being was negatively associated with conflict and positively associated with closeness, while negative well-being was positively associated with conflict and dependency. Meaning that teachers' well-being relates to the child-teacher relationship, further emphasizing that this relationship is not unidirectional. Links between teachers workload stress or burnout and perceived difficulty in teaching assignments correspond with higher rated conflict with children (Corbin et al., 2019; Mantzicopoulos, 2005). Tension and worry were the two negative feelings with the highest mean ratings in the present study, which could be interpreted similarly to stress, therefore, the present findings are in line with previous research. Teaching is an emotionally demanding process, also in the preschool setting, which includes emotional transactions between the teacher, the class environment and individual children (Corbin et al., 2019). The association between negative well-being and conflict was the strongest ($\beta=0.30$), further demonstrating that negative emotional states (teachers' well-being and children's behaviour) are more pronounced than positive ones. Our findings however cannot give the direction of influence; whether children who exhibit higher conflict in the relationship cause an increase in teachers' negative feelings, or whether teachers bring their negative feelings into the classroom setting which results in children reacting more negatively to them. This directionality would be interesting to better understand, especially in the preschool setting where such associations already start to appear, with more future longitudinal designs enabling such effects to be captured which would also allow for more targeted interventions for the teacher or student.

Positive well-being was associated with higher closeness, and lower conflict but not associated with dependency. Negative feelings, however, were positively associated with dependency. This finding appears to suggest that teachers might in fact interpret dependency negatively, and indeed a small positive correlation was found between dependency and conflict ($r = 0.08$). It could be due to dependant children requiring additional attention, similarly to children who exhibit higher levels of conflict, which could hinder a teacher's effectiveness in class. However, it is evident that more research is necessary to fully understand the associations between these predictors, specifically how teachers interpret the dependency questions and how this interpretation varies across time as their affective state fluctuates. one study gives indication that early childcare teachers viewed closeness as a bidirectional relationship, where both teachers and children contribute to the interdependence of the relationship (Quan-McGimpsey, Kuczynski, & Brophy, 2011). There-

fore, it is unclear whether teachers do in fact view dependency as an opposing dimension to closeness. This qualitative study indicated that teachers were found to often reference aspects of interdependence, as part of a close relationship, in the form of mutual emotional connection and shared knowledge (Quan-McGimpsey et al., 2011). But perhaps, interdependence is viewed positively as it is behaviour exhibited by both the teacher and child, while the dependency questions in the STRS refer to dependency that is only exhibited by the child, hence, interpreted negatively. Nevertheless, we believe that the continuation of inclusion of the dependency subscale is important, notably in other cultural settings where more variability in its interpretation is evident.

Unlike previous studies that have found teacher gender to affect their perception of their relationship quality with individual students (e.g., Quaglia et al., 2013), our analysis did not find any significant associations with teachers' gender and the subsequent child-teacher relationship. This could be due to the small number of male teachers in the sample, or perhaps that teachers' gender effects become more pronounced in later years when children are older. Lastly, in line with previous studies we found that teacher experience was a significant negative predictor of conflict (O'Connor, 2010; Quaglia et al., 2013), likely attesting to the fact that with more experienced teachers can cope with children's externalizing behaviour more effectively and hence minimise conflictual relationships with them. It is possible that more experienced teachers develop certain strategies the enable them to minimise the effects of conflict with children, and while experience cannot be transferred, it could indicate an opportunity for teachers to learn for each other, and for these strategies to be identified more precisely.

4.4. The child-teacher relationship and classroom quality

In terms of the relation between the ECERS-R and the STRS, thus far few studies have investigated this. Our analysis did not find that classroom quality was related to any of the dimensions of the child-teacher relationship in an early years setting. Mayer and Beckh (2016) when investigating the validity of the ECERS-R in a German nationally representative sample, conducted regression analyses of different measures of children's outcomes in the classroom, one of the outcomes was the STRS. However, the results did not indicate any significant association between the STRS and the ECERS-R. Similarly, other studies found no association between various socio-emotional child outcomes and the ECERS-R (Gordon, Fujimoto, Kaestner, Korenman, & Abner, 2013; Mashburn

et al., 2008). These authors did raise some issues with the validity of the ECERS-R, and the need for its psychometric improvement. It should be noted that the ECERS-R is a comprehensive measure of classroom quality, which includes observations regarding the physical space of the classroom as well as activities and interactions within the classroom, unlike for example the Classroom Assessment Scoring System (CLASS; Pianta, La Paro, & Hamre, 2007) which is more focused on different aspects of social and instructional interaction within the classroom. Mashburn et al. (2008) also suggest that using the total ECERS-R score could be the reason for a lack of associations, and that a total score which combines a range of features of the classroom environment might lack some precision to pick up effects.

Issues with measurement tools and differing results across research emphasises the importance of reviewing even established measures. O'Connor (2010) examined classroom climate and classroom management in their study and found longitudinal effects of well-managed classrooms. However, as they did not use the ECERS-R instrument, this perhaps suggests that the type of classroom environment quality that the ECERS-R measures does not adequately relate to elements of the child–teacher relationship for significant results to be found. The issue of multidimensionality of the classroom environment is often brought up, as definitions of this construct vary across the literature and, therefore, so do the measures of it which include various dimensions (Grazia & Molinari, 2021). These discrepancies are important and likely why we did not find any significant results in our analysis.

4.5. Limitations and future research

The study and the subsequent findings have several strengths that have contributed to a better understanding of the child–teacher relationship. A substantial strength of the present analysis is the large, representative sample size. It has allowed for greater inferences to be made from the results and also contributed to the validity of the results. Furthermore, using the target-rotation ESEM technique, and later adjustment for clustering is also considered a substantial strength of the study. Namely this has allowed for the hierarchical nature of data to be taken into account. This is especially important when investigating the child–teacher relationship as this is a feature of the classroom that will vary between teachers.

Nevertheless, some limitations need to also be taken into account. One limitation regarding the methodology of the present study is that the child–teacher relationship was only measured using the STRS, hence, relying solely on teachers' reports of the relationship. As has been shown, any relationship wanting to be captured in research should ideally be captured from multiple perspectives whether that is from both participants concerned in a dyad or from a third-person, observational perspective (Gregoriadis et al., 2021). In the present study we did not have any child reports of relationship quality which would have been a useful inclusion, however, having a well-validated scale like the ECERS nevertheless gave us third-person reports. Furthermore, with this being a cross-sectional study, the results can only be interpreted in that they represent a screenshot in time of the relationship between a teacher and child. As the child–teacher relationship is complex and dynamic, there is reason to believe that it can change for a variety of confounding factors such as fluctuations in children's and teachers' affective state or due to effects of children's development (McFarland et al., 2016). Moreover, for more substantial conclusions to be drawn the child–teacher relationship would benefit from being evaluated longitudinally. Finally, while insight can and was gained into the effects of school level and child level variables using multilevel modelling this analytic approach cannot indicate the direction of causality, and care should be taken when interpreting the results.

As mentioned, the use of only teachers' reports of the child–teacher relationship, suggests that future research should aim to include also children's perspectives of the relationship. However, this can be difficult in preschool children and would require careful development of

new measures to match those already used for teachers. Furthermore, a deeper investigation into the effects of classroom quality would also be beneficial. As we found a significant effect of school-type on conflict, suggesting that higher conflict was reported in childcare centres, which generally younger children attend in Greece we did not find children's age to predict conflict. Therefore, it is possible that a structural characteristic in the environment could explain this difference. We were unable to compare the STRS between the two types of preschools as invariance testing is currently not possible in the ESEM target-rotation specification, but future methodological enhancements are likely to facilitate this.

Lastly, cultural factors are often proposed as explanatory characteristics for variation in the relation between different dimensions of the child–teacher relationship yet cultural context is not measured (Fraire et al., 2013; Gregoriadis & Tsigilis, 2008). The field of child–teacher relationship research is evidently important for children's outcomes, but if this relational process is dependant on the culture in which it measured, some cultural aspects need to be operationalized for this association to be explicitly investigated. However, whether the individualistic-collectivistic aspect of culture is solely responsible for differences in the child–teacher relationship is not clear. For example, Chen, Zee, Koomen, and Roorda (2019) compared a Dutch and Chinese sample of students and teachers and found no significant mean-level difference on the dependency scale between the two cultures, despite the two countries being different in their individualistic-collectivistic nature. Therefore, the relationship between cultures marked by higher collectivism is not necessarily the only explanatory factor.

The present results also have important implications for policy and practice. The finding that conflict is affected by child-level and teacher-level factors in the early years gives good indication that it can be intervened at an early age as well. Some interventions have successfully improved relational interactions between children and teachers by emphasizing positive interactions and friendliness during dyadic tasks (Roorda et al., 2013). Most research suggests that fostering a positive and warm relationship can buffer the risk factors associated with conflict (Roorda et al., 2011; Sabol & Pianta, 2012), therefore, such interventions are crucial. Knowing that teachers' affective well-being can affect their perception of the relationship is an important finding for schools and educational leaders to implement in teacher education and consequently expand teachers' understanding of the importance of the student–teacher relationship and what can affect it.

5. Conclusion

In line with the study aims, our results indicated that the three-factor structure of the STRS remains valid, and the conceptualisation of relationship quality in terms of closeness, conflict and dependency is relevant in the Greek context also. The findings also indicate that the child–teacher relationship can be influenced by both teacher and child characteristics. Teachers' affective well-being was a particularly important finding where both positive and negative well-being were associated with closeness, conflict and dependency. Children's gender was also associated with all aspects of relationship quality, where teachers rated having different relationships in the classroom with girls and boys. Children's SEN status was also a significant predictor of the three STRS dimensions, and we suggest that more research is needed to better understand the dynamics of preschool children with SEN and their relationships with their teachers. The child–teacher relationship is an especially important component of preschool classrooms where children first face an educational context with a teacher in the role of caregiver and educator. Furthermore, the characteristics of the relationship can differ cross-culturally, as the level of appropriate behaviour especially for younger children and their milestones is culturally defined, an aspect of child–teacher relationship studies that requires more research. As this relationship is important in children's development and plays a key role in education, a range of child and teacher characteristics should be

taken into account when considering how to foster more close and supportive child–teacher relationships and importantly mitigate conflict.

Funding

This study was supported by a grant from the European Union (European Social Fund) and national resources under the operational programme ‘Education and Lifelong Learning’. Data were collected in the Early-Q Thales project (Project license protocol number F15/503/92498/C1) by Athanasios Gregoriadis, Vasilis Grammatikopoulos and Evridiki Zachopoulou. The first author presented her findings as part of her MSc dissertation in Child Development and Education, at the University of Oxford in 2019–20.

Declaration of Competing Interest

None.

CRediT authorship contribution statement

Mirna Šumatić: Writing – original draft, Formal analysis, Visualization, Conceptualization. **Lars-Erik Malmberg:** Formal analysis, Writing – review & editing, Supervision, Conceptualization. **Athanasios Gregoriadis:** Methodology, Writing – review & editing, Investigation, Funding acquisition, Resources, Conceptualization, Project administration. **Vasilis Grammatikopoulos:** Investigation, Funding acquisition, Resources, Project administration. **Evridiki Zachopoulou:** Investigation, Funding acquisition, Resources, Project administration.

Data availability

The data that has been used is confidential.

Acknowledgements

None.

References

- Ahnert, L., Harwardt-Heinecke, E., Kappler, G., Eckstein-Madry, T., & Milatz, A. (2012). Student-teacher relationships and classroom climate in first grade: How do they relate to students' stress regulation? *Attachment and Human Development*, *14*(3), 249–263. [10.1080/14616734.2012.673277](https://doi.org/10.1080/14616734.2012.673277).
- Ang, R. P. (2005). Confirmatory Factor Analysis. *The Journal of Experimental Education*, *74*(1), 55–74.
- Asparouhov, T., & Muthén, B. (2009). Exploratory structural equation modeling. *Structural equation modeling*, *16*. [10.1080/10705510903008204](https://doi.org/10.1080/10705510903008204).
- Baker, J. A. (2006). Contributions of teacher-child relationships to positive school adjustment during elementary school. *Journal of School Psychology*, *44*(3), 211–229. [10.1016/j.jsp.2006.02.002](https://doi.org/10.1016/j.jsp.2006.02.002).
- Barendse, M. T., & Rosseel, Y. (2020). Multilevel modeling in the ‘wide format’ approach with discrete data: A solution for small cluster sizes. *Structural Equation Modeling: A Multidisciplinary Journal*, *27*(5), 696–721.
- Beyazkurk, D., & Kesner, J. E. (2005). Teacher-child relationships in Turkish and United States schools: A cross-cultural study. *International Education Journal*, *6*(5), 547–554.
- Bowlby, J. (1982). Attachment and loss: Retrospect and prospect. *American Journal of Orthopsychiatry*, *52*(4), 664–678.
- Cadima, J., Doumen, S., Verschuere, K., & Leal, T. (2015). Examining teacher–child relationship quality across two countries. *Educational Psychology*, *35*(8), 946–962. [10.1080/01443410.2013.864754](https://doi.org/10.1080/01443410.2013.864754).
- Cassidy, D., Hestenes, L., Hegde, A., Hestenes, S., & Mims, S. (2005). Measurement of quality in preschool child care classrooms: The early childhood environment rating scale-revised and its' psychometric properties. *Early Childhood Research Quarterly*, *20*(3), 345–360. [10.1016/j.ecresq.2005.07.005](https://doi.org/10.1016/j.ecresq.2005.07.005).
- Chen, M., Zee, M., Koomen, H. M. Y., & Roorda, D. L. (2019). Understanding cross-cultural differences in affective teacher-student relationships: A comparison between Dutch and Chinese primary school teachers and students. *Journal of School Psychology*, *76*, 89–106. [10.1016/j.jsp.2019.07.011](https://doi.org/10.1016/j.jsp.2019.07.011).
- Corbin, C., Alamos, P., Lowenstein, A. E., Downer, J. T., & Brown, J. L. (2019). The role of teacher-student relationships in predicting teachers' personal accomplishment and emotional exhaustion. *Journal of School Psychology*, *77*, 1–12.
- Dafermou, H., Koulouri, P., & Basagianni, E. (2006). *Preschool teacher guide*. Athens: Pedagogical Institute, Ministry of National Education and Religion.
- Davis, H. A. (2003). Conceptualizing the role and influence of student-teacher relationships on children's social and cognitive development. *Educational Psychologist*, *38*(4), 207–234.
- Demirkaya, P. N., & Bakkaloglu, H. (2015). Examining the student-teacher relationship of children both with and without special needs in preschool classrooms. *Educational Sciences: Theory & Practice*, *15*(1), 159–175. [10.12738/estp.2015.1.2590](https://doi.org/10.12738/estp.2015.1.2590).
- European Commission/EACEA/Eurydice. (2021). Greek pre-primary and primary education. Eurydice report: Brussels Retrieved from https://eacea.ec.europa.eu/national-policies/eurydice/content/primary-education-20_en#PP at April 5th, 2021.
- Ferreira, T., Cadima, J., Matias, M., Leal, T., & Matos, P. M. (2020). Teacher-child dependency in preschool: Links with teacher-child closeness, conflict and children's effortful control. *Attachment and Human Development*. [10.1080/14616734.2020.1752438](https://doi.org/10.1080/14616734.2020.1752438).
- Fraire, M., Longobardi, C., Prino, L. E., & Sclavo, E. (2013). Examining the Student-Teacher Relationship Scale in the Italian Context: A Factorial Validity Study. *Electronic Journal of Research in Educational Psychology*, *11*(31), 851–882.
- Freire, S., Pipa, J., Aguiar, C., da Silva, F. V., & Moreira, S. (2020). Student-teacher closeness and conflict in students with and without special educational needs. *British Educational Research Journal*, *46*(3), 480–499. [10.1002/berj.3588](https://doi.org/10.1002/berj.3588).
- Glüer, M., & Gregoriadis, A. (2017). Quality of teacher–child relationship and preschoolers' prosocial behaviour in German kindergartens. *Education*, *45*(5), 3–13.
- Gordon, R. A., Fujimoto, K., Kaestner, R., Korenman, S., & Abner, K. (2013). An Assessment of the Validity of the ECERS-R With Implications for Measures of Child Care Quality and Relations to Child Development. *Developmental Psychology*, *49*(1), 146–160. [10.1037/a0027899](https://doi.org/10.1037/a0027899).
- Grammatikopoulos, V., Gregoriadis, A., Tsigilis, N., & Zachopoulou, E. (2012). Parental conceptions of quality in Greek early childhood education. *European Early Childhood Education Research Journal*, *22*(1), 134–148.
- Grazia, V., & Molinari, L. (2021). School climate multidimensionality and measurement: A systematic review. *Research Papers in Education*, *36*(5) 651–587. [10.1080/02671522.2019.1697735](https://doi.org/10.1080/02671522.2019.1697735).
- Gregoriadis, A., & Tsigilis, N. (2008). Applicability of the Student – Teacher Relationship Scale (STRS) in the Greek Educational Setting. *Journal of Psychoeducational Assessment*, *26*(2), 108–120.
- Gregoriadis, A., Tsigilis, N., Grammatikopoulos, V., & Kouli, O. (2016). Comparing quality of childcare and kindergarten centres: The need for a strong and equal partnership in the Greek early childhood education system. *Early Child Development and Care*, *186*(7), 1142–1151. [10.1080/03004430.2015.1077820](https://doi.org/10.1080/03004430.2015.1077820).
- Gregoriadis, A., Grammatopoulos, V., Tsigilis, N., & Verschuere, K. (2021). Teachers' and children's perceptions about their relationships: Examining the construct of dependency in the Greek sociocultural context. *Attachment & Human Development*. [10.1080/14616734.2020.1751990](https://doi.org/10.1080/14616734.2020.1751990).
- Hamre, B., Hatfield, B., Pianta, R., & Jamil, F. (2014). Evidence for General and Domain-Specific Elements of Teacher-Child Interactions: Associations With Preschool Children's Development. *Child Development*, *85*(3), 1257–1274. [10.1111/cdev.12184](https://doi.org/10.1111/cdev.12184).
- Hamre, B. K., & Pianta, R. C. (2001). Early teacher-child relationships and the trajectory of children's school outcomes through eighth grade. *Child Development*, *72*(2), 625–638. [10.1111/1467-8624.00301](https://doi.org/10.1111/1467-8624.00301).
- Harms, T., Clifford, R. M., & Cryer, D. (1998). *Early childhood environment rating scale*. New York: Teachers College Press.
- Hestenes, L. L., Rucker, L., Wang, Y. C., Mims, S. U., Hestenes, S. E., & Cassidy, D. J. (2019). A Comparison of the ECERS-R and ECERS-3: Different Aspects of Quality? *Early Education and Development*, *30*, 496–510.
- Hornstra, L., Denessen, E., Bakker, J., van den Bergh, L., & Voeten, M. (2010). Teacher Attitudes Toward Dyslexia: Effects on Teacher Expectations and the Academic Achievement of Students with Dyslexia. *Journal of Learning Disabilities*, *43*(6), 515–529. [10.1177/0022219409355479](https://doi.org/10.1177/0022219409355479).
- Koepke, M. F., & Harkins, D. A. (2008). Conflict in the classroom: Gender differences in the teacher-child relationship. *Early Education and Development*, *19*(6), 843–864. [10.1080/10409280802516108](https://doi.org/10.1080/10409280802516108).
- Koomen, H. M. Y., Verschuere, K., van Schooten, E., Jak, S., & Pianta, R. C. (2012). Validating the Student-Teacher Relationship Scale: Testing factor structure and measurement invariance across child gender and age in a Dutch sample. *Journal of School Psychology*, *50*(2), 215–234. [10.1016/j.jsp.2011.09.001](https://doi.org/10.1016/j.jsp.2011.09.001).
- Koutiva, M. (2019). *HR practices, workplace well being and knowledge creation (Doctoral thesis)*. Greece: University of Thessaly.
- Mantzicopoulos, P. (2005). Conflictual relationships between kindergarten children and their teachers: Associations with child and classroom context variables. *Journal of School Psychology*, *43*(5), 425–442. [10.1016/j.jsp.2005.09.004](https://doi.org/10.1016/j.jsp.2005.09.004).
- Mashburn, A. J., Pianta, R. C., Hamre, B. K., Downer, J. T., Barbarin, O. A., Bryant, D., Burchinal, M., Early, D. M., & Howes, C. (2008). Measures of Classroom Quality in Prekindergarten and Children's Development of Academic, Language, and Social Skills. *Child Development*, *79*, 732–749. [10.1111/j.1467-8624.2008.01154.x](https://doi.org/10.1111/j.1467-8624.2008.01154.x).
- Mayer, D., & Beckh, K. (2016). Examining the validity of the ECERS-R: Results from the German National Study of Child Care in Early Childhood. *Early Childhood Research Quarterly*, *36*, 415–426.
- McFarland, L., Murray, E., & Phillipson, S. (2016). Student-teacher relationships and student self-concept: Relations with teacher and student gender. *Australian Journal of Education*, *60*(1), 5–25.
- MoE/PI. (2002). *Cross-thematic curriculum framework for compulsory education (DEPPS)*. Athens: Ministry of National Education and Religion.
- Moen, A. L., Sheridan, S. M., Schumacher, R. E., & Cheng, K. C. (2019). Early childhood student-teacher relationships: What is the role of classroom climate for children who are disadvantaged. *Early Childhood Education Journal*, *47*, 331–341. [10.1007/s10643-019-00931-x](https://doi.org/10.1007/s10643-019-00931-x).
- Morin, A. J. S., & Asparouhov, T. (2018). *Estimation of a hierarchical exploratory structural equation model (ESEM) using esem-within-cfa*. Montreal, QC: Substantive Methodological Synergy Research Laboratory See: <https://smslabstats.weebly.com/webnotes.html>.

- Muthén, L. K., & Muthén, B. O. (1998–2017). *Mplus user's guide. Eighth edition*. Los Angeles, CA: Muthén & Muthén.
- Neuhauser, R., McCormick, M., & O'Connor, E. (2020). The mediating role of child-teacher dependency in the association between early mother-child attachment and behavior problems in middle childhood. *Attachment & Human Development, 23*(5), 523–539.
- O'Connor, E. (2010). Teacher-child relationships as dynamic systems. *Journal of School Psychology, 48*, 187–218.
- Oyserman, D., & Lee, S. W. S. (2008). Does culture influence what and how we think? Effects of priming individualism and collectivism. *Psychological Bulletin, 134*(2), 311–342.
- Pakarinen, E., Silinskas, G., Hamre, B. K., Metsäpelto, R. L., Lerkkanen, M. K., Poikkeus, A. M., & Nurmi, J. E. (2018). Cross-Lagged Associations Between Problem Behaviors and Teacher-Student Relationships in Early Adolescence. *Journal of Early Adolescence, 38*(8), 1100–1141. [10.1177/0272431617714328](https://doi.org/10.1177/0272431617714328).
- Papadopoulou, V., Theodosiadou, K., & Palaiologou, N. (2020). Teachers' Personal Theories of Teaching: Managing Cultural Diversity in Mainstream Public Schools in Greece. *Journal of Ethnic and Cultural Studies, 7*(2), 195–211. [10.29333/ejecs/375](https://doi.org/10.29333/ejecs/375).
- Pappas, M., Papoutsis, C., & Drigas, A. (2018). Policies, Practices, and Attitudes toward Inclusive Education: The Case of Greece. *Social Sciences, 7*, 90.
- Pearlman, M., Zellman, G. L., & Le, V. N. (2004). Examining the psychometric properties of the Early Childhood Environment Rating Scale-Revised (ECERS-R). *Early Childhood Research Quarterly, 19*(3), 398–412. [10.1016/j.ecresq.2004.07.006](https://doi.org/10.1016/j.ecresq.2004.07.006).
- Pianta, R. C. (2001). *Student-Teacher relationship scale. professional manual*. Lutz, Florida: Psychological Assessment Resources.
- Pianta, R. C., La Paro, K. M., & Hamre, B. K. (2007). *Classroom assessment scoring system - CLASS*. Baltimore: Brookes.
- Pianta, R. C., & Steinberg, M. (1992). Teacher-child relationships and the process of adjusting to school. *New Directions for Child and Adolescent Development, 57*, 61–80. [10.1002/cd.23219925706](https://doi.org/10.1002/cd.23219925706).
- Pianta, R. C., & Stuhlman, M. (2004). Teacher-Child Relationships and Children's Success in the First Years of School. *School Psychology Review, 33*, 444–458.
- Quaglia, R., Gastaldi, F. G. M., Prino, L. E., Pasta, T., & Longobardi, C. (2013). The pupil-teacher relationship and gender differences in primary school. *The Open Psychology Journal, 6*, 69–75.
- Quan-McGimpsey, S., Kuczynski, L., & Brophy, K. (2011). Early education teachers' conceptualizations and strategies for managing closeness in child care: The personal domain. *Journal of Early Childhood Research, 9*(3), 232–246. [10.1177/1476718X10389146](https://doi.org/10.1177/1476718X10389146).
- Roorda, D. L., Koomen, H. M. Y., Spilt, J. L., & Oort, F. J. (2011). The influence of affective teacher-student relationships on students' school engagement and achievement: A meta-analytic approach. *Review of Educational Research, 81*(4), 493–529. [10.3102/0034654311421793](https://doi.org/10.3102/0034654311421793).
- Roorda, D. L., Koomen, H. M. Y., Thijs, J. T., & Oort, F. J. (2013). Changing interactions between teachers and socially inhibited kindergarten children: An interpersonal approach. *Journal of Applied Developmental Psychology, 34*(4), 173–184. [10.1016/j.appdev.2013.03.002](https://doi.org/10.1016/j.appdev.2013.03.002).
- Roorda, D. L., Zee, M., & Koomen, H. M. Y. (2020). Don't forget student-teacher dependency! A Meta-analysis on associations with students' school adjustment and the moderating role of student and teacher characteristics. *Attachment and Human Development, 10.1080/14616734.2020.1751987.*
- Rudasill, K. M. (2021). Child-teacher dependency: The state of the research. *Attachment & Human Development, 23*(5), 572–580.
- Sabol, T. J., & Pianta, R. C. (2012). Recent trends in research on teacher-child relationships. *Attachment & Human Development, 14*(3), 213–231.
- edited by Schreyer, I., & Oberhuemer, P. (2017). Greece – Key Contextual Data. In P. Oberhuemer, & I. Schreyer (Eds.), *Workforce profiles in systems of early childhood education and care in europe*. edited by www.seeepro.eu/Country_Reports/.
- Semeraro, C., Giofre, D., Coppola, G., Lucangeli, D., & Cassibba, R. (2020). The role of cognitive and non-cognitive factors in mathematics achievement: The importance of the quality of the student-teacher relationship in middle school. *PLoS ONE, 15*(4), Article E0231381. [10.1371/journal.pone.0231381](https://doi.org/10.1371/journal.pone.0231381).
- Sette, S., Zuffiano, A., Lucidi, F., Laghi, F., Lonigro, A., & Baumgartner, E. (2016). Evaluating the Student-Teacher Relationship Scale in Italian young children: An exploratory structural equation modeling approach. *Journal of Psychoeducational Assessment, 36*(3), 284–290. [10.1177/0734282916674601](https://doi.org/10.1177/0734282916674601).
- Thijs, J., Westhof, S., & Koomen, H. (2012). Ethnic incongruence and the student-teacher relationship: The perspective of ethnic majority teachers. *Journal of School Psychology, 50*, 257–273. [10.1016/j.jsp.2011.09.004](https://doi.org/10.1016/j.jsp.2011.09.004).
- Triandis, H. C. (1989). The self and social behavior in differing cultural contexts. *Psychological Review, 96*(3), 506–520.
- Triandis, H. C. (2001). Individualism-Collectivism and Personality. *Journal of Personality, 69*(6), 907–924.
- Triandis, H. C., & Gelfand, M. J. (1998). Converging measurement of horizontal and vertical individualism and collectivism. *Journal of Personality and Social Psychology, 74*(1), 118–128.
- Tsigilis, N., Gregoriadis, A., & Grammatikopoulos, V. (2018a). Evaluating the Student-Teacher Relationship Scale in the Greek educational setting: An item parcelling perspective. *Research Papers in Education, 33*(4), 414–426. [10.1080/02671522.2017.1353675](https://doi.org/10.1080/02671522.2017.1353675).
- Tsigilis, N., Gregoriadis, A., Grammatikopoulos, V., & Zachopoulou, E. (2018b). Applying Exploratory Structural Equation Modeling to Examine the Student-Teacher Relationship Scale in a Representative Greek Sample. *Frontiers in Psychology, 9*, 733. [10.3389/fpsyg.2018.00733](https://doi.org/10.3389/fpsyg.2018.00733).
- Vahidi, E., Ghanbari, S., Koomen, H., Zardkhane, S. A., & Zee, M. (2022). Examining factorial validity of the student-teacher relationship scale in the Iranian educational setting. *Studies in Educational Evaluation, 72*, Article 101125. [10.1016/j.stueduc.2022.101125](https://doi.org/10.1016/j.stueduc.2022.101125).
- Vatou, A., Gregoriadis, A., Tsigilis, N., & Grammatikopoulos, V. (2020). Patterns of teacher-child relationships quality: Young children's perspectives. *Journal of Early Childhood Education Research, 9*, 498–521.
- Verschueren, K., & Koomen, H. M. Y. (2012). Teacher-child relationships from an attachment perspective. *Attachment and Human Development, 14*(3), 205–211. [10.1080/14616734.2012.672260](https://doi.org/10.1080/14616734.2012.672260).
- Wang, M. T., & Degol, J. L. (2016). School climate: A review of the construct, measurement, and impact on student outcomes. *Educational Psychology Review, 28*, 315–352. [10.1007/s10648-015-9319-1](https://doi.org/10.1007/s10648-015-9319-1).
- Warr, P. (1990). The measurement of well-being and other aspects of mental health. *Journal of Occupational Psychology, 63*, 193–210.
- Webb, M., young, L., & Neuharth-Pritchett, S. (2011). Examining factorial validity and measurement invariance of the Student-Teacher Relationship Scale. *Early Childhood Research Quarterly, 26*(2), 205–215. [10.1016/j.ecresq.2010.09.004](https://doi.org/10.1016/j.ecresq.2010.09.004).
- Zee, M., de Bree, E., Hakvoort, B., & Koomen, H. M. Y. (2020). Exploring relationships between teachers and students with diagnosed disabilities: A multi-informant approach. *Journal of Applied Developmental Psychology, 66*, Article 101101. [10.1016/j.appdev.2019.101101](https://doi.org/10.1016/j.appdev.2019.101101).

Further reading

- Enders, C. K., & Tofighi, D. (2007). Centering predictor variables in cross-sectional multi-level models: A new look at an old issue. *Psychological Methods, 12*(2), 121–138.
- Koomen, H. M. Y., & Jellesma, F. (2015). Can closeness, conflict, and dependency be used to characterize students' perceptions of the affective relationship with their teacher? Testing a new child measure in middle childhood. *British Journal of Educational Psychology, 85*, 479–497.
- Sroufe, A. L., Fox, N. E., & Pancake, V. R. (1983). Attachment and dependency in developmental perspective. *Child Development, 54*(6), 1615–1627.