education sciences

MDPI

Article

Cross-Cultural Validation of Teachers Social Self-Efficacy Scale: Insights from Cyprus, Greece, and Portugal

Anastasia Vatou [1,*], Athanasios Gregoriadis [2], Maria Evagelou-Tsitiridou [1], George Manolitsis [3], Angeliki Mouzaki [4], Maria Kypriotaki [3], Vasileios Oikonomidis [3], Ana Lemos [5], Filipe Piedade [5], Diana Alves [5], Joana Cadima [5], Demos Michael [6], Vicky Charalambous [7], Andri Agathokleous [7], Charalambos Vrasidas [6,8] and Vasilis Grammatikopoulos [1]

[1] Department of Early Childhood Education and Care, International Hellenic University, 57400 Thessaloniki, Greece; tsitiridou@ihu.gr (M.E.-T.); gramvas@ihu.gr (V.G.)
[2] Department of Early Childhood Education, Aristotle University of Thessaloniki, 54636 Thessaloniki, Greece; asis@nured.auth.gr
[3] Department of Preschool Education, University of Crete, 74100 Rethymno, Greece; gmanolitsis@uoc.gr (G.M.); mkypriotaki@uoc.gr (M.K.); oikonomid@uoc.gr (V.O.)
[4] Department of Primary Education, University of Crete, 74100 Rethymno, Greece; amouzaki@uoc.gr
[5] Faculty of Psychology and Educational Sciences, University of Porto, 4200-135 Porto, Portugal; anarlemos@fpce.up.pt (A.L.); fpiedade@fpce.up.pt (F.P.); dianalves@fpce.up.pt (D.A.); jcadima@fpce.up.pt (J.C.)
[6] Center for the Advancement of Research & Development in Educational Technology, 2401 Nicosia, Cyprus; demos.michael@cardet.org (D.M.); pambos@cardet.org (C.V.)
[7] Institute of Development, 2401 Nicosia, Cyprus; vicky@iodevelopment.eu (V.C.); andri.agathokleous@iodevelopment.eu (A.A.)
[8] School of Education, University of Nicosia, 2414 Nicosia, Cyprus
* Correspondence: anastasia.vatou@ihu.gr

Abstract: The main aim of this study is to explore early childhood teachers' social self-efficacy in Cyprus, Greece, and Portugal. In addition, this study examines the validity of the factorial structure of the Teachers' Social Self-Efficacy Scale (TSSES). A sample of 349 early childhood teachers across the three countries participated in this study. An exploratory analysis and then a confirmatory factor analysis were employed to reveal the structure of the TSSES. Configural and metric invariance were established for the one-factor structure of the TSSES. The results showed that teachers in Portugal and Cyprus experience high levels of social self-efficacy, whereas Greek teachers experience moderate to high levels of social self-efficacy. The TSSES seems to be a reliable instrument for assessing social self-efficacy beliefs. Possible implications for practice are also discussed.

Keywords: teachers' social self-efficacy; cross-cultural assessment; construct validity; measurement invariance; early childhood education and care

Citation: Vatou, A.; Gregoriadis, A.; Evagelou-Tsitiridou, M.; Manolitsis, G.; Mouzaki, A.; Kypriotaki, M.; Oikonomidis, V.; Lemos, A.; Piedade, F.; Alves, D.; et al. Cross-Cultural Validation of Teachers Social Self-Efficacy Scale: Insights from Cyprus, Greece, and Portugal. *Educ. Sci.* **2024**, *14*, 840. https://doi.org/10.3390/educsci14080840

Academic Editor: Andrea Nolan

Received: 19 June 2024
Revised: 23 July 2024
Accepted: 31 July 2024
Published: 2 August 2024

1. Introduction

The quality of teacher-child relationships in the field of Early Childhood Education and Care (ECEC) refers to the characteristics of interactions that occur between the teacher and children in preschool settings [1] and is considered one of the most important determinants of children's academic, socio-emotional, and behavioral outcomes [2]. Over the past four decades, most studies have explored the quality of teacher-child relationships and various factors they are associated with, such as teachers' characteristics (teaching style, responsiveness, etc.) [3], children's characteristics (gender, behaviour, etc.) [2], characteristics of the classroom environment (discipline climate, routines, etc.) [4] and cultural factors (individualistic or collectivistic countries) [5]. The current literature acknowledges the importance of the quality of teacher-child relationships; however, little is known about how

strongly teachers believe in their competence to develop and promote positive relationships with children [4,6,7].

Over the last few years, there has been a growing interest in teachers' efficacy beliefs regarding their competence in promoting affective teacher-child relationships [4,8]. According to social cognitive theory, self-efficacy is a salient indicator of successful practices. Self-efficacy refers to individuals' beliefs about their abilities to successfully perform specific tasks [9]. In this theory, the construct of self-efficacy is considered domain-specific, and as a result, it is task-specific and context-dependent. Consistent with Bandura's [9] work, Tschannen-Moran and Woolfolk Hoy [10] proposed a framework in which teachers' self-efficacy is described as their sense of competence to achieve desired outcomes in three primary teaching tasks: instructional strategies, students' engagement, and managing classrooms. Therefore, teachers' self-efficacy beliefs can be associated with the beliefs that teachers hold about their perceived ability to undertake certain professional tasks [10].

Studies on teachers' self-efficacy have found benefits for teachers and children in school settings [11,12]. Teachers with a strong sense of self-efficacy experience increased job satisfaction and job commitment, contributing to their well-being [13]. They also exhibit quality classroom instructions and a willingness to adopt innovative practices [11]. Importantly, high levels of teachers' self-efficacy are positively related to increased child achievements, positive behavior, and motivation [12].

Given the apparent value of teachers' sense of efficacy, it is surprising that there is a paucity of research examining teachers' self-efficacy beliefs in terms of cultivating and fostering positive teacher-child relationships in the early years [14]. The rationale for examining teachers' social self-efficacy across different educational contexts is grounded in the significant role that these relationships play in children's development [12]. Moreover, examining and understanding teachers' efficacy beliefs can facilitate the development of positive teacher-child relationships in ECEC, which in turn can have additional benefits for teachers' professional wellbeing and job satisfaction [13]. The present study aims to fill a gap in the literature concerning the specific measurement of teachers' social self-efficacy in the context of teacher-child relationships [4,6,9]. This construct refers to teachers' beliefs in their abilities to successfully accomplish specific interactional tasks that develop and maintain affective teacher-child relationships [8]. This research focuses on three European countries: Cyprus, Greece, and Portugal.

2. Literature Review

2.1. Teachers' Social Self-Efficacy

Research has consistently pointed out the importance of teachers' self-efficacy in improving teaching performance and children's outcomes in educational systems worldwide [13,14]. One of the key areas in which teachers' self-efficacy beliefs are particularly important is in developing positive relationships with children [4], which, in turn, is crucial for promoting children's socio-emotional development [6,15].

Bandura [9] argued that the exploration of self-efficacy beliefs must be tailored to a specific domain of performance that is under examination each time, as they can vary for different activities and tasks (e.g., reading self-efficacy, teaching math self-efficacy). The construct of teachers' social self-efficacy focuses on the domain of teachers' interactions with children, which is also the main interest of this study. Social self-efficacy is a specific type of self-efficacy that refers to an individual's beliefs in their capacity to initiate and maintain positive social interactions with others [9].

The concept of the teacher-child relationship is centered on the quality of interactions between teacher and child, encompassing aspects such as emotional support. Given the multifaced nature of teacher-child interactions, defining and measuring teachers' social self-efficacy is challenging. In the context of ECEC, the Teachers' Social Self-Efficacy Scale (TSSES) addresses this challenge by adopting a bi-factor model that captures both the general construct of social self-efficacy and its specific sub-domains. This approach ensures a comprehensive assessment of social self-efficacy beliefs, acknowledging the multidi-

mensional nature of these interactions [8]. While, several researchers have developed and validated scales to measure social self-efficacy, either as a unidimensional or multidimensional construct [16,17], the most widely used measure for adult populations is the Perceived Social Self-Efficacy (PSSE) scale [18]. This unidimensional scale consists of 25 items elaborating on 6 aspects of social interactions (e.g., developing relations, making friends, offering help), and its psychometric properties have been confirmed by several studies (e.g., [17]). Although it seems promising that there have been several studies examining the psychometric properties of a variety of social self-efficacy scales in the literature, very few studies have examined the construct of social self-efficacy in the educational context and specifically in the ECEC context [8].

These few studies have shown a positive direct or indirect association between teachers' social self-efficacy and teacher-child relationships [4,7]. Particularly, it has been observed that teachers with a strong sense of social self-efficacy are more likely to engage in responsive and warm interactions with children, provide effective feedback, and collaborate with parents and colleagues than teachers with a low sense of social self-efficacy [19,20]. These interactions with children, in turn, have an impact on children's socio-emotional skills and academic achievement [20]. However, to the extent of our knowledge, no study has examined the concept of teachers' social self-efficacy across different cultures and educational systems.

2.2. Teachers' Social Self-Efficacy across Cultures and Contexts

A growing body of literature highlights the importance of teachers' social self-efficacy in developing positive relationships with children [19,21], as well as the need to explore self-efficacy constructs across different educational contexts [14,21,22]. Exploring teachers' social self-efficacy across different educational contexts is an important step in understanding how values can impact the way teachers view their practices and their social competencies.

When it comes to general teachers' self-efficacy, studies have shown that cross-cultural differences can influence teachers' beliefs and values [21,22]. Teaching practices and conditions differ considerably within and across countries, and these variations may influence teachers' beliefs about their roles and responsibilities [23]. Klassen et al. [24] explored teachers' self-efficacy in five different countries and found that self-efficacy is a valid construct across culturally diverse settings. However, the cross-cultural comparison could be more informative if the research also focused on the specific tasks that teachers are required to perform, such as the development of positive interpersonal relationships.

By identifying similarities or differences in teachers' beliefs and practices, researchers and policymakers could design culturally sensitive interventions to improve the quality of teacher-child relationships, as well as the quality of the overall learning environment [25]. Teachers are expected to be the primary caregivers and role models for their children in many countries [26]. Therefore, teachers' social self-efficacy beliefs in developing positive relationships with their children are critical for their success as teachers. However, educational differences can significantly affect how teachers interact with their children, as beliefs and expectations about education and teacher-child relationships vary across countries [5].

2.3. Early Childhood Education and Care (ECEC) in Cyprus, Greece, and Portugal

The three countries under study—Cyprus, Greece, and Portugal—share some cultural similarities, such as Mediterranean influences and collectivist tendencies, and there are important differences in their educational systems, schools, and curriculum/guidelines levels [26]. These differences provide a relevant context for cross-cultural study because they allow for the examination of how educational practices and cultural nuances influence teachers' social self-efficacy beliefs and their ability to foster positive teacher-child relationships.

At the individual level, cultural values and beliefs tend to shape teachers' perceptions of their role and responsibilities. In Mediterranean cultures like Cyprus, Greece, and Portugal, collectivist values emphasize community, cooperation, and strong interpersonal

relationships, which can impact teachers' self-efficacy in developing positive relationships with children [27].

At the school level, differences in educational policies, curriculum frameworks, teachers' qualifications, and training programs reflect how each country prioritizes early childhood education [28–30]. For example, Greece's compulsory ECEC system for children aged 4–6 years, with its cross-thematic national curriculum, contrasts with Cyprus's child-centered, play-based approach and Portugal's optional primary education with comprehensive curriculum guidelines [28–30]. Moreover, in Greece, the ECEC system is compulsory for children aged 4–6 years and regulated by the Ministry of Education and Religious Affairs [28]. In Cyprus, the Ministry of Education, Sport, and Youth oversees pre-primary education, which is compulsory from the age of 4 years and 8 months, currently lasting 1 year with plans for extension [29]. In Portugal, ECEC services for children up to 3 years of age are not part of the education system and fall under the Ministry of Labour, Solidarity, and Social Security, while pre-primary education is the first stage of basic education under the Ministry of Education and is optional [30].

At the society level, the role of each country's governance plays a significant role in teacher practices and children's outcomes. Specifically, in Greece, the cross-thematic national curriculum "DEPPS" for ECEC focuses mainly on children's socio-emotional and academic development. The national curriculum incorporates various domains of children's development, including creative expression, language, and cognitive, physical, and socio-emotional development. Introduced in 2004, this curriculum is still being implemented today, with ongoing additions [28]. The Cypriot educational curriculum aims to address the basic needs of children, focusing on cognitive, social-emotional, aesthetic, and psychomotor development. This curriculum is based on the principles of child-centered education and emphasizes the importance of play-based learning. These principles guide teachers to create learning environments that are responsive to the individual needs of children, fostering their overall development through interactive methods [29]. The Portuguese curriculum guidelines are comprehensive, consisting of three parts. The first part includes the principles of ECEC, intentionality in education, and the organisation of the educational environment. The second part outlines the three content domains: children's social and personal education, knowledge of the world, and expression-communication. The last part covers educational transitions, providing strategies to facilitate smooth transitions and enhance the connectedness among children's different environments. Reviewed and updated in 2016, these guidelines ensure that the curriculum remains current and effective in promoting holistic development [30].

In terms of early childhood (ECE) teachers' qualifications, ECE teachers from Cyprus, Greece, and Portugal are required to be highly qualified across the ECEC system. This means that ECE teachers from Cyprus and Greece have to acquire a four-year bachelor's degree in ECEC, whereas ECE teachers from Portugal who graduated after 2008 are required to hold a master's degree. In addition to these initial requirements, ECE teachers from these countries are also expected to engage in ongoing professional development to improve their skills and knowledge [26].

2.4. The Present Study

The aim of this study is to investigate ECE teachers' social self-efficacy in Cyprus, Greece, and Portugal. To achieve this, the study explored the psychometric characteristics of the Teachers' Social Self-Efficacy Scale, TSSES [8]. Specifically, this study analysed the construct validity of the TSSES, its measurement invariance, and internal consistency in a sample of ECE teachers across the three participating countries. By validating this scale across different cultural and educational contexts, the study offers new insights into how cultural and educational factors impact teachers' efficacy beliefs. Three research questions guided this study:

1. Which are the psychometric properties of the TSSES when implemented in different countries?
2. Does the TSSES achieve the three levels of cross-cultural equivalence (configural, metric, and scalar)?
3. Does the level of teachers' social self-efficacy differ across the three participating countries according to the TSSES scores?

3. Materials and Methods

3.1. Research Model

This study employs a cross-sectional survey design to validate the Teachers' Social Self-Efficacy Scale, TSSES, across three countries: Cyprus, Greece, and Portugal. The design allows for data collection at a single time from a diverse sample of ECE teachers.

3.2. Participants

A total of 76 childcare settings and kindergartens participated in the current study, with the distribution as follows: Cyprus (n = 24), Greece (n = 32), and Portugal (n = 20). The selection process, while intended to be random, was guided by the initial interest expressed by the ECEC settings. Official circulars were distributed by the local authorities. Local authorities invited these ECEC settings to participate in the European project called "Promoting Teachers Well-being through Positive Behaviour Support in Early Childhood Education" (ProW). Subsequently, ECEC teachers from each setting were asked to participate in the study. Research members from each country evaluated the interest in ECEC settings based on specific criteria and the size of ECEC classrooms.

The sample of the study consisted of 349 ECEC professionals (early childhood teachers and assistants) from Cyprus (32.7%), Greece (38.79%), and Portugal (28.7%). Of the respondents, 344 (98.6%) were female, and 5 (1.4%) were male. The predominance of female teachers in early childhood education is a well-documented phenomenon in Europe [31]. Participants' ages ranged from 23 to 64 (M_{age} = 46.19, SD_{age} = 9.06). Educators' teaching experience ranged from 0 to 41 ($M_{experience}$ = 19.71, $SD_{experience}$ = 9.55) years. A total of 15 teachers did not report their age, and 24 teachers did not report their years of teaching experience. Table 1 summarises the participants' demographic characteristics.

Table 1. Demographic characteristics of ECEC teachers in three countries.

Background Variables		Greece (n = 135)	Cyprus (n = 114)	Portugal (n = 100)
Gender	%female %male	96.3% 3.5%	100%	100%
Age	Mean age (SD)	47.41 (8.39)	42.32 (7.89)	49.44 (9.82) (n = 85)
	Range age	23 to 61	23 to 60	25 to 64
Education	% bachelor degree	63.7	31.6	53.0
	% master degree	31.9	64.9	4.0
	% doctorate degree	-	2.6	-
	% other	4.4	0.9	43.9
Teaching experience	Mean experience (SD)	20.01 (8.22)	17.86 (9.39)	21.95 (11.41) (n = 76)
	Range experience	0 to 37	0 to 38	0 to 41

3.3. Instrument

To measure the teachers' social self-efficacy construct, the Teachers' Social Self-Efficacy Scale (TSSES) [8] was used (Table A1), along with the teachers' demographic data. The

TSSES was developed to capture teachers' beliefs in their abilities to successfully accomplish specific interactional tasks essential for developing and maintaining positive teacher-child relationships.

This instrument was designed to measure the general construct of social self-efficacy (the bi-factor model) as well as the five specific sub-domains that are related to the general construct of social self-efficacy. The TSSES consists of a set of 29 items that are evaluated on a Likert scale, with teachers rating the strength of their beliefs on each item, ranging from 1 (not at all) to 9 (a great deal). It includes items that directly pertain to the teacher-child relationship context, such as managing classroom behavior, providing emotional support, and fostering a positive classroom environment. A higher score on the TSSES reflected a higher level of a teacher's social self-efficacy.

The original Greek version of the scale was translated into English by a native speaker. The translated version of the TSSES was back-translated into the original language. Researchers compared the back-translated version with the original version to check for discrepancies in meaning and wording. One item was recognized as a mistranslation and was removed from the scale (item 23 on the original scale, "To what extent can you gain the trust and respect of a "difficult" child?") (see Appendix A for the English version). The Greek version of the scale was administered to Cypriot teachers. Then, as the original and back-translated versions were reviewed, the final English version of the TSSES was also translated to Portuguese. The omega coefficient in the present study was 0.956 for the full sample, 955 for the Greek sample, 0.957 for the Cypriot sample, and 0.954 for the Portuguese sample.

3.4. Procedures

Before the ProW project began, ethical clearance ensuring that the research was conducted in an ethical and responsible manner was obtained from the ethics committees of the participating countries. Researchers informed teachers about their participation in the project implementation procedures, ensuring their anonymity, data discretion, and confidentiality. Research members collected the data. The questionnaire was emailed directly to ECE teachers from Cyprus and Greece, while ECE teachers and assistants from Portugal completed the questionnaire through paper and pencil administration due to limited access to online surveys. Teachers responded to the questionnaire voluntarily without any personal incentives, and they had the option to withdraw their consent at any given point.

3.5. Data Analysis

All factor analyses and measurement invariance analyses were conducted with RStudio Desktop (ver.2023.03.0 + 386).

Factor analysis. Exploratory factor analysis (EFA) was applied to the whole sample to investigate the factorial structure of the TSSES in the three participating countries. EFA, using principal axis factor analysis followed by Oblimin rotation, was conducted. The decision about the number of factors to retain was based on a combination of methods, including an eigenvalue over 1.0, a scree plot, and the interpretability of factors. Items should preferably load greater than 40 [32]. Then, a confirmatory factor analysis (CFA) was used to test the model based on the results from the EFA (M1). In addition, a different factor model was estimated in order to compare the proposed model (M1) to the simpler model (M2). Given the number of items in the TSSES and the limited sample size per country of this study, researchers decided to create a shorter version of the TSSES. The examination of Modification Indices (MIs) was utilized to identify redundant items within the latent factors of the TSSES. Following the recommendations from Byrne [33], these items were removed from the scale. Items with factor loadings close to 1 were kept.

Model testing was conducted in R using the maximum likelihood method of estimation via the lavaan package [34]. A combination of fit indices was utilized to examine the hypothesized measurement model using the cut-off criteria recommended by Hu and

Bentler [35] and Kline [36]. Given that the χ^2 statistic is highly influenced by the sample size, emphasis was given to the Comparative Fit Index (CFI), the Tucker Lewis Index (TLI), the Root-Mean-Square Error of Approximation (RMSEA), and the Standardized Root Mean Square Residual (SRMR). The following values of fit indices were considered acceptable: the CFI and TLI with values $\geq$ 0.90 or 0.95, the RMSEA and the SRMR with critical values from $\leq$0.06 to $\leq$0.08, and the SRMR with a cut-off value of <0.08 [34]. The $\chi^2/df \leq 0.5.0$ was also used to identify the model's fit to the data [37]. The omega coefficient assessed the internal consistency of the TSSES [38].

Measurement invariance. Having identified the most tenable baseline model for the TSSES, the measurement invariance was examined across the three participating countries. The configural, metric, and scalar invariances were all examined across the groups. Configural invariance investigated whether the TSSES structure was equivalent across groups without any constraints, and acted as a baseline model for the next step of invariance testing (the unconstrained model). Metric invariance examined whether the participants responded to the TSSES items in the same way, irrespective of their group membership. Testing metric invariance involved fitting the equality constraints on factor loadings across the different groups. Finally, scalar invariance was tested by setting the items' intercept to be the same across levels [31]. In terms of model comparison, the oversensitivity of $\Delta\chi^2$ led us to adopt the ΔCFI $\leq$ 01 and ΔRMSEA $\leq$ 012 numerical model fit index to indicate the invariance [39,40].

4. Results

4.1. Factorial Analyses and Reliability of TSSES

Initial EFA revealed one factor solution with an eigenvalue of 16.3, explaining 58.3% of the common variance. Furthermore, the examination of the scree plot clearly showed that one factor should be retained (Figure 1).

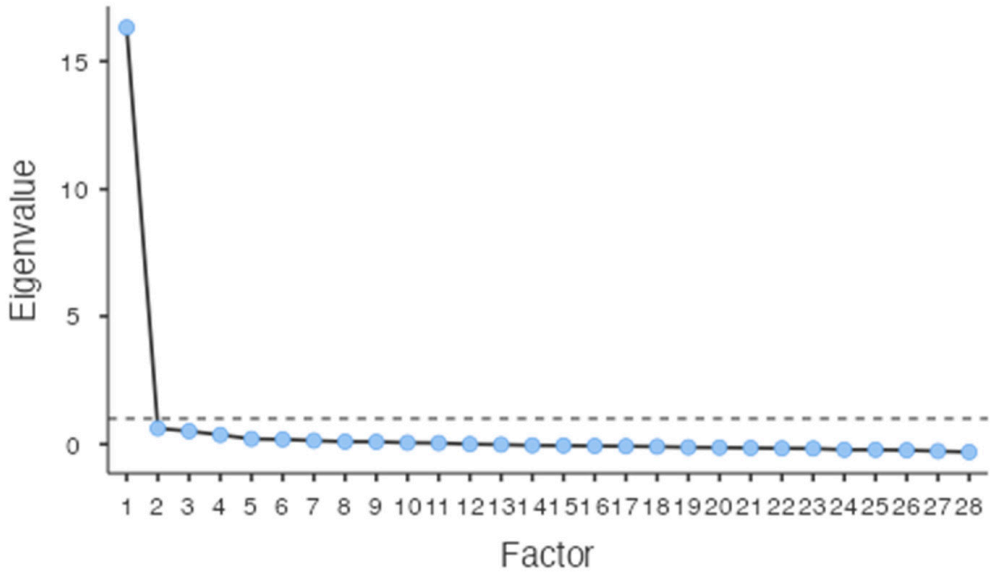

Figure 1. Scree plot for the 28 items.

Next, a CFA was employed to evaluate the goodness of fit of the model obtained from the EFA (M1). Initially, CFA showed a marginal fit (χ^2 = 739.265, *df* = 350, $p < 0.001$, CFI = 0.933, TLI = 0.928, RMSEA = 0.066, SRMR = 0.036). As the baseline model has marginal fit indices, and taking into account the ratio of the sample size to the number of items in TSSES for each country, an alternative model was created (M2), by examining the modification indices and retaining items with factor loadings larger than 70. Following this decision, the second model consisted of 17 items. Model 2 revealed a significant increment in fit indices compared with the previous M1 (χ^2 = 234.685, *df* = 118, $p < 0.001$,

CFI = 0.966, TLI = 0.96, RMSEA = 0.053, SRMR = 0.029). Additionally, a chi-squared difference test between M1 and M2 demonstrated that M2 fit the data significantly better than M1 ($\Delta\chi^2$ = 504.83, $p < 0.001$). All item loadings for the one-factor of TSSES ranged from 741 to 855 (Table 2).

Table 2. Confirmatory factor analyses results of the TSSES in all the participating countries.

Items	To What Extent Can You	F1
Item_21	. . .develop a trusting relationship with each child separately?	0.837
Item_28	. . .redirect a child when it is disruptive or noisy?	0.817
Item_24	. . .help children who are having a conflict to solve it?	0.814
Item_07	. . .make your expectations about their behavior clear to children?	0.812
Item_22	. . .handle a child who is misbehaving when it wants something?	0.809
Item_10	. . .motivate children who are not engaged in an activity?	0.798
Item_26	. . .recognize how a child feels in the classroom?	0.797
Item_20	. . .be a role model for children in the preschool environment?	0.792
Item_9	. . .motivate children to play together?	0.788
Item_15	. . .provide opportunities to children to explore the environment and try things on their own?	0.782
Item_25	. . .make children in your class follow your instructions?	0.778
Item_6	. . .make a child talk to you about his/her feelings?	0.777
Item_11	. . .plan activities that help create a positive classroom climate?	0.773
Item_18	. . .use questions to examine whether children understand a rule properly?	0.765
Item_12	. . .predict how children will react to your behavior?	0.763
Item_5	. . .handle a child who is complaining to attract attention?	0.756
Item_27	. . .recognize when a child really needs help and support?	0.741
ω		0.966

The omega reliability coefficient of the TSSES of each country and the descriptive statistics are shown in Table 3. The results showed that the omega coefficient of the TSSES of each country was higher than 0.90, indicating that the reliability of the scale is acceptable.

Table 3. Descriptive statistics and omega coefficient across the three countries.

TSSES General	M	SD	Min	Max	ω
Greece (n = 135)	7.20	0.98	4.73	9.00	0.955
Cyprus (n = 114)	7.45	0.91	3.41	9.00	0.968
Portugal (n = 100)	7.59	0.89	4.75	9.00	0.960

4.2. Measurement Invariance Analyses

CFAs were conducted for each country separately to determine whether the one-factor solution of TSSES adequately fit the data (Table 4). As can be seen in Table 4, the one-factor solution of TSSES exhibited a satisfactory RMSEA value and excellent values for CFI, TLI, and SRMR, suggesting an overall good fit. Afterwards, the measurement invariance analysis progressed by examining the configural, metric, and scalar models across countries. A comparison ran between the configural model and the metric model, which tested invariance (see Table 4). When the factor loadings were restricted to be equal, the model fit dropped only slightly (ΔCFI = 0.009, ΔRMSEA = 0.001), but adding further invariance constraints such as equal intercepts led to a noticeable drop in model fit (ΔCFI = 0.11, ΔRMSEA = 0.03).

Table 4. Fit Statistics for CFAs and Invariance Tests.

Model	χ^2	*df*	χ^2/df	RMSEA	[90%CI]	CFI	TLI	SRMR
				CFA				
One-factor model								
Overall	131.01 ***	65	2.01	0.05	[0.04, 0.06]	0.97	0.96	0.02
				One-factor model for each country				
Greece	195.51 ***	118	1.65	0.07	[0.05, 0.08]	0.95	0.94	0.03
Cyprus	161.63 **	118	1.36	0.05	[0.03, 0.07]	0.92	0.90	0.04
Portugal	183.66 ***	118	1.55	0.07	[0.05, 0.09]	0.91	0.90	0.05
				Invariance models				
Configural	539.01 ***	354	1.52	0.06	[0.05, 0.07]	0.92	0.91	0.04
Metric	594.61 ***	388	1.53	0.06	[0.06, 0.08]	0.91	0.91	0.08
Scalar	995.04 ***	420	2.36	0.10	[0.11, 0.13]	0.77	0.77	0.12

Note. χ^2 = chi-square value; *df* = degrees of freedom; CFI = Comparative Fit Index; TLI = Tucker–Lewis Index; RMSEA = Root Mean Square Error Approximation; SRMR = Standardised Root Mean Square Residual. ** $p < 0.01$, *** $p < 0.001$.

5. Discussion

The primary aim of this study was to explore early childhood teachers' social self-efficacy in Cyprus, Greece, and Portugal. The value of teacher's social self-efficacy has only recently been indicated in education [4,7,11]. The study investigated the factorial validity of TSSES across three countries. Overall, the results of this study showed that the one-factor solution of TSSES, including 17 items, appears to be a practical and promising measure for assessing teachers' social self-efficacy in the three countries. From a conceptual perspective, the one-factor structure is consistent with the previous measurement research on general teachers' self-efficacy [10] and social self-efficacy [18]. From a methodological perspective, the findings are also congruent with a study that indicated that a teacher's efficacy scale could act either as a second-order factor or could be consolidated into a single factor [10].

This study also examined the measurement invariance of the TSSES. The results indicated that the adapted short version of TSSES holds configural and metric invariance across the different countries. This implies that the items were related to the proposed theoretical background. The support of metric invariance indicates that researchers could compare correlations between the TSSES and other variables of interest and patterns of means (e.g., profiles) across cultural samples [31]. The TSSES in its current form is a suitable measure to estimate teachers' social self-efficacy in a cross-cultural educational context. In the Cypriot context, ECE teachers demonstrated a high level of social self-efficacy beliefs. This could be attributed to the supportive professional environment, as the Cypriot education system offers continuous training programs, opportunities, and resources that may contribute to teachers' confidence in their abilities. Furthermore, the Cypriot educational curriculum places a high value on relationships between adults and children. It is a key element of children's development [28], which may impact ECE teachers feeling more competent in their roles.

A closer inspection of the country-specific means on teachers' social self-efficacy indicates that Greek ECE teachers reported moderate levels of efficacy beliefs. One possible explanation for this could be the fact that Greece has faced many challenges during the last decade (e.g., economic crisis, refugee crisis), which led to a significant impact on the country's education system [41]. The economic crisis led to austerity measures that resulted in budget cuts for education, reduced salaries, and limited resources for schools [42]. These financial constraints have placed additional stress on teachers, potentially lowering their efficacy beliefs. Moreover, the influx of refugees has increased the diversity and complexity of classroom environments, requiring teachers to adapt to new challenges with often insufficient support and training [43]. It seems that ECE teachers in Greece face more challenging working conditions and may have fewer resources, which can affect their social self-efficacy beliefs. Teachers may feel less confident in their ability to manage classrooms effectively, provide emotional support, and foster positive relationships with children when they are working under such pressures. According to Bandura [9], self-efficacy is a dynamic construct

that is influenced by the context in which it is formed. Therefore, the context and the working conditions in which teachers work may significantly affect their social self-efficacy beliefs.

Findings showed that the Portuguese ECE teachers demonstrated high levels of social self-efficacy beliefs. One possible reason for this could be the fact that the Portuguese educational context and curriculum place a high value on social relationships and family and community involvement [30], which may influence the way that ECE teachers view their role in the interpersonal domain. Another possible explanation for this finding could be connected with the teacher's "evaluation culture". Research reveals that schools that have an evaluation culture and teachers who are frequently called to self-evaluate themselves tend to evaluate themselves more positively [44].

The above findings have some implications for practice. Researchers, school counselors, and principals can identify teachers with a low or moderate level of social self-efficacy. Research suggests that teachers' knowledge of effective teacher-child interaction can improve the quality of ECEC [1]. The short version of TSESS is a promising approach to improving the replicability of findings in the field of ECEC. The results of this study also offer useful findings for the evaluation of teachers' professional development and the design of interventions that aim to improve teacher-child relationships and teachers' effectiveness in ECEC settings. Utilizing social cognitive theory to evaluate teachers' social self-efficacy can serve as a general guide for designing intervention programs that prioritize the teachers' empowerment of social self-efficacy and the promotion of positive teacher-child relationships.

Limitations and Future Research

While offering valuable information on researching social self-efficacy, the findings of this study must be viewed in light of several limitations. First, it is important to acknowledge that the use of this sample may lead to a biased sample, as those who volunteered to participate in the European project may have different characteristics from those who declined. Future research could aim to recruit a more representative sample of ECEC settings using the random method of recruitment that will be geographically spread over all parts of the participating countries. Second, teachers' social self-efficacy was evaluated by a self-report instrument; thus, the results of the study may be interpreted with caution. Future research is encouraged to implement different data sources (e.g., observations). Third, the use of different data collection methods (e.g., online questionnaires vs. paper-and-pencil questionnaires) across the participating countries may introduce variations in how participants respond to the survey. Future research should use a uniform data collection method to enhance the comparability of the findings. Finally, this study assessed teachers' overall perceptions of their social self-efficacy with the children in their classrooms, rather than their perceptions about social self-efficacy with some specific children. By examining teachers' social self-efficacy at the dyad level, the results might be different.

6. Conclusions

Based on the social cognitive theory [9], the current study tested and provided evidence of the TSSES scale to measure the teachers' social self-efficacy in a sample of three countries. In the first validation study of the TSSES in a European sample of early childhood teachers, the current study demonstrated the validity of the TSSES. Given that social self-efficacy beliefs represent a significant contributor to teacher-child relationship quality [7,8], the stability of the measurement instrument represents an important step forward towards a broadened understanding of teachers' beliefs in their competences in developing positive teacher-child relationships. Furthermore, the empirical findings of this study indicated that there were some differences in teachers' perceived social self-efficacy among early childhood teachers in the three participating countries: Cyprus, Greece, and Portugal. In particular, the Portuguese early childhood teachers demonstrated the highest level of social self-efficacy, followed by the Cypriot early childhood teachers and the Greek early childhood teachers. This study is the first of its kind to examine teachers' social

self-efficacy across three European countries. Using the instrument presented in this study and other self-efficacy measures, researchers can gain a deeper insight into the strengths and weaknesses of teachers' effectiveness and identify areas for improvement.

Author Contributions: Conceptualization, A.V., A.G., M.E.-T., J.C., D.M. and V.C.; Methodology, G.M. and A.M.; Formal analysis, A.V., G.M., A.M. and J.C.; Investigation, G.M., A.M., A.L., F.P., D.A. and A.A.; Data curation, G.M., A.L., F.P., D.A. and A.A.; Writing—original draft, A.V. and D.M.; Writing—review & editing, A.G., M.E.-T., M.K., V.O., D.A. and C.V.; Supervision, M.E.-T., V.C. and V.G.; Project administration, A.V. and V.G.; Funding acquisition, V. All authors have read and agreed to the published version of the manuscript.

Funding: This research has been funded by the European Commission. Project Number: 626146-EPP-1-2020-2-EL-EPPKA3-PI-POLICY).

Institutional Review Board Statement: The study was conducted in accordance with the Declaration of Helsinki, and approved by the Institutional Review Board of the International Hellenic University (Protocol Code: Δ.Φ.2.1/989/20.01.2021; Approval Date: 20 April 2022).

Informed Consent Statement: Informed consent was obtained from all subjects involved in the study.

Data Availability Statement: The data that support the findings of this study are not publicly available as they contain information that could compromise research participant privacy and consent.

Acknowledgments: The study presented in this paper is part of the project entitled "Promoting Teachers Well-being through Positive Behaviour Support in Early Childhood Education" (ProW) Project Number: 626146-EPP-1-2020-2-EL-EPPKA3-PI-POLICY)", under the Erasmus+ Key Action 3 to policy development and cooperation. The project has been funded with support from the European Commission. This publication reflects the views only of the authors, and the Commission cannot be held responsible for any use which may be made of the information contained therein.

Conflicts of Interest: The authors have stated no potential conflict of interest.

Appendix A

Table A1. Teachers' Social Self-Efficacy Full Scale [8].

Items
To what extent can you. . .
1. . . .control a noisy classroom without raising your voice?
2. . . .encourage a child to assist a classmate who needs help during an activity?
3. . . .get children to work together in pairs or in small groups?
4. . . .give children the freedom to select with whom they will work with during an activity?
5. . . .handle a child who is complaining to attract attention?
6. . . .make a child talk to you about his/her feelings?
7. . . .make your expectations about their behavior clear to children?
8. . . .manage to explain in a calm way a rule that a child has broken repeatedly?
9. . . .motivate children to play together?
10. . . .motivate children who are not engaged in an activity?
11. . . .plan activities that help create a positive classroom climate?
12. . . .predict how children will react to your behavior?
13. . . .provide a positive and supportive environment for children?
14. . . .provide children with opportunities for training in social skills and positive behaviors?
15. . . .provide opportunities to children to explore the environment and try things on their own?
16. . . .recognize whether a child is annoyed with you?
17. . . .understand what causes negative feelings to children in the classroom?
18. . . .use questions to examine whether children understand a rule properly?
19. . . .utilize children's different personality traits for the benefit of the classroom climate?
20. . . .be a role model for children in the preschool environment?
21. . . .develop a trusting relationship with each child separately?
22. . . .handle a child who is misbehaving when it wants something?
23. . . .help a child calm down when s/he is feeling angry?
24. . . .help children who are having a conflict to solve it?
25. . . .make children in your class follow your instructions?
26. . . .recognize how a child feels in the classroom?
27. . . .recognize when a child really needs help and support?
28. . . .redirect a child when it is disruptive or noisy?

References

1. Hamre, B.K.; Pianta, R.C.; Burchinal, M.; Field, S.; LoCasale-Crouch, J.; Downer, J.T.; Howes, C.; LaParo, K.; Scott-Little, C. A Course on Effective Teacher-Child Interactions. *Am. Educ. Res. J.* **2012**, *49*, 88–123. [CrossRef]
2. Roorda, D.L.; Jak, S.; Zee, M.; Oort, F.J.; Koomen, H.M.Y. Affective Teacher–Student Relationships and Students' Engagement and Achievement: A Meta-Analytic Update and Test of the Mediating Role of Engagement. *Sch. Psychol. Rev.* **2017**, *46*, 239–261. [CrossRef]
3. Van Der Lans, R.M.; Cremers, J.; Klugkist, I.; Zwart, R.C. Teachers' Interpersonal Relationships and Instructional Expertise: How Are They Related? *Stud. Educ. Eval.* **2020**, *66*, 100902. [CrossRef]
4. Hajovsky, D.B.; Chesnut, S.R.; Jensen, K.M. The Role of Teachers' Self-Efficacy Beliefs in the Development of Teacher-Student Relationships. *J. Sch. Psychol.* **2020**, *82*, 141–158. [CrossRef] [PubMed]
5. Nguyen, D.; Pietsch, M.; Gümüş, S. Collective Teacher Innovativeness in 48 Countries: Effects of Teacher Autonomy, Collaborative Culture, and Professional Learning. *Teach. Teach. Educ.* **2021**, *106*, 103463. [CrossRef]
6. Borremans, L.F.N.; Spilt, J.L. Development of the Competence Measure of Individual Teacher-Student Relationships (COMMIT): Insight into the Attitudes, Knowledge, and Self-Efficacy of Pre-Service Teachers. *Front. Educ.* **2022**, *7*, 831468. [CrossRef]
7. Yin, H.; Tam, W.W.Y.; Lau, E.S.H. Examining the Relationships between Teachers' Affective States, Self-Efficacy, and Teacher-Child Relationships in Kindergartens: An Integration of Social Cognitive Theory and Positive Psychology. *Stud. Educ. Eval.* **2022**, *74*, 101188. [CrossRef]
8. Vatou, A.; Gregoriadis, A.; Tsigilis, N.; Grammatikopoulos, V. Teachers' Social Self-Efficacy: Development and Validation of a New Scale. *Cogent Educ.* **2022**, *9*, 2093492. [CrossRef]
9. Bandura, A. *Self-Efficacy: The Exercise of Control*; Macmillan: New York, NY, USA, 1997.
10. Tschannen-Moran, M.; Woolfolk Hoy, A. Teacher Efficacy: Capturing an Elusive Construct. *Teach. Teach. Educ.* **2001**, *17*, 783–805. [CrossRef]
11. Klassen, R.M.; Chiu, M.M. Effects on Teachers' Self-Efficacy and Job Satisfaction: Teacher Gender, Years of Experience, and Job Stress. *J. Educ. Psychol.* **2010**, *102*, 741–756. [CrossRef]
12. Zee, M.; Koomen, H.M.Y. Engaging Children in the Upper Elementary Grades: Unique Contributions of Teacher Self-Efficacy, Autonomy Support, and Student-Teacher Relationships. *J. Res. Child. Educ.* **2020**, *34*, 477–495. [CrossRef]
13. Klassen, R.M.; Wilson, E.; Siu, A.F.Y.; Hannok, W.; Wong, M.W.-Y.; Wongsri, N.; Sonthisap, P.; Pibulchol, C.; Buranachaitavee, Y.; Jansem, A. Preservice Teachers' Work Stress, Self-Efficacy, and Occupational Commitment in Four Countries. *Eur. J. Psychol. Educ.* **2013**, *28*, 1289–1309. [CrossRef]
14. De Jong, R.; Mainhard, T.; Van Tartwijk, J.; Veldman, I.; Verloop, N.; Wubbels, T. How Pre-Service Teachers' Personality Traits, Self-Efficacy, and Discipline Strategies Contribute to the Teacher-Student Relationship. *Br. J. Educ. Psychol.* **2014**, *84*, 294–310. [CrossRef] [PubMed]
15. Arace, A.; Prino, L.E.; Scarzello, D. Emotional Competence of Early Childhood Educators and Child Socio-Emotional Wellbeing. *Int. J. Environ. Res. Public Health* **2021**, *18*, 7633. [CrossRef] [PubMed]
16. Alessandri, G.; Filosa, L.; Eisenberg, N.; Caprara, G.V. Within-Individual Relations of Emotional, Social, and Work Self-Efficacy Beliefs to Organizational Citizenship Behaviors. *J. Res. Pers.* **2021**, *91*, 104073. [CrossRef]
17. Loeb, C.; Stempel, C.R.; Isaksson, K. Social and Emotional Self-Efficacy at Work. *Scand. J. Psychol.* **2016**, *57*, 152–161. [CrossRef]
18. Smith, H.M.; Betz, N.E. Development and Validation of a Scale of Perceived Social Self-Efficacy. *J. Career Assess.* **2000**, *8*, 283–301. [CrossRef]
19. Chang, C.-F.; Hall, N.C. Differentiating Teachers' Social Goals: Implications for Teacher–Student Relationships and Perceived Classroom Engagement. *AERA Open* **2022**, *8*, 23328584211064916. [CrossRef]
20. Pekrun, R.; Elliot, A.J.; Maier, M. Achievement Goals and Achievement Emotions: Testing a Model of Their Joint Relations with Academic Performance. *J. Educ. Psychol.* **2009**, *101*, 115–135. [CrossRef]
21. Yada, A.; Tolvanen, A.; Malinen, O.P.; Imai-Matsumura, K.; Shimada, H.; Koike, R.; Savolainen, H. Teachers' Self-Efficacy and the Sources of Efficacy: A Cross-Cultural Investigation in Japan and Finland. *Teach. Teach. Educ.* **2019**, *81*, 13–24. [CrossRef]
22. Ho, I.T.; Hau, K.-T. Australian and Chinese Teacher Efficacy: Similarities and Differences in Personal Instruction, Discipline, Guidance Efficacy and Beliefs in External Determinants. *Teach. Teach. Educ.* **2004**, *20*, 313–323. [CrossRef]
23. Avanzi, L.; Miglioretti, M.; Velasco, V.; Balducci, C.; Vecchio, L.; Fraccaroli, F.; Skaalvik, E.M. Cross-Validation of the Norwegian Teacher's Self-Efficacy Scale (NTSES). *Teach. Teach. Educ.* **2013**, *31*, 69–78. [CrossRef]
24. Klassen, R.M.; Bong, M.; Usher, E.L.; Chong, W.H.; Huan, V.S.; Wong, I.Y.F.; Georgiou, T. Exploring the Validity of a Teachers' Self-Efficacy Scale in Five Countries. *Contemp. Educ. Psychol.* **2009**, *34*, 67–76. [CrossRef]
25. Rimm-Kaufman, S.E.; Hamre, B.K. The Role of Psychological and Developmental Science in Efforts to Improve Teacher Quality. *Teach. Coll. Rec.* **2010**, *112*, 2988–3023. [CrossRef]
26. European Commission/EACEA/Eurydice. *Key Data on Early Childhood Education and Care in Europe*, 2019 ed.; Publications Office of the European Union: Luxembourg, 2019.
27. Gregoriadis, A.; Grammatikopoulos, V.; Tsigilis, N.; Verschueren, K. Teachers' and children's perceptions about their relationships: Examining the construct of dependency in the Greek sociocultural context. *Attach. Hum. Dev.* **2021**, *23*, 556–571. [CrossRef] [PubMed]
28. Eurydice. Greece: Early Childhood Education and Care. Available online: https://eurydice.eacea.ec.europa.eu/national-education-systems/greece/early-childhood-education-and-care (accessed on 5 June 2023).

29. Eurydice. Cyprus: Early Childhood Education and Care. Available online: https://eurydice.eacea.ec.europa.eu/national-education-systems/cyprus/early-childhood-education-and-care (accessed on 5 June 2023).
30. Eurydice. Portugal: Early Childhood Education and Care. Available online: https://eurydice.eacea.ec.europa.eu/national-education-systems/portugal/early-childhood-education-and-care (accessed on 5 June 2023).
31. Eurostat. *Classroom Teachers and Academic Staff by Education Level, Programme Orientation, Sex and Age Groups*; Eurostat: Luxembourg, 2022. Available online: https://ec.europa.eu/eurostat/statistics-explained/index.php?title=Early_childhood_education_statistics#Resources_.E2.80.93_staff (accessed on 5 June 2023).
32. Stevens, J.P. *Applied Multivariate Statistics for the Social Sciences*; Routledge: New York, NY, USA, 2012; pp. 1–676. [CrossRef]
33. Byrne, B.M. *Structural Equation Modeling with AMOS: Basic Concepts, Applications, and Programming*, 3rd ed.; Routledge: New York, NY, USA, 2016.
34. Rosseel, Y. Lavaan: An R Package for Structural Equation Modeling. *J. Stat. Softw.* **2012**, *48*, 1–36. [CrossRef]
35. Hu, L.; Bentler, P.M. Cutoff Criteria for Fit Indexes in Covariance Structure Analysis: Conventional Criteria versus New Alternatives. *Struct. Equ. Model. Multidiscip. J.* **1999**, *6*, 1–55. [CrossRef]
36. Kline, R.B. *Principles and Practice of Structural Equation Modeling*; Guilford Publications: New York, NY, USA; London, UK, 2015.
37. Schermelleh-Engel, K.; Moosbrugger, H.; Müller, H.G. Evaluating the Fit of Structural Equation Models: Tests of Significance and Descriptive Goodness-of-Fit Measures. *Methods Psychol. Res. Online* **2003**, *8*, 23–74.
38. Hayes, A.F.; Coutts, J.J. Use Omega Rather Than Cronbach's Alpha for Estimating Reliability. But. . .. *Commun. Methods Meas.* **2020**, *14*, 1–24. [CrossRef]
39. Chen, F.F. Sensitivity of Goodness of Fit Indexes to Lack of Measurement Invariance. *Struct. Equ. Model. Multidiscip. J.* **2007**, *14*, 464–504. [CrossRef]
40. Cheung, G.W.; Rensvold, R.B. Evaluating Goodness-of-Fit Indexes for Testing Measurement Invariance. *Struct. Equ. Model. Multidiscip. J.* **2002**, *9*, 233–255. [CrossRef]
41. OECD. Greece Policy Brief. Migration. Available online: https://www.oecd.org/greece/greece-addressing-migration-challenges-beyond-the-current-humanitarian-crisis.pdf (accessed on 5 June 2023).
42. OECD. What is the Impact of the Economic Crisis on Public Education Spending? In *Education Indicators in Focus*; No. 18; OECD Publishing: Paris, France, 2013. [CrossRef]
43. Mogl ı, M.; Kalbenı, S.; Stergıou, L. "The Teacher is not a Magician": Teacher Training in Greek Reception Facilities for Refugee Education. *Int. e-J. Educ. Stud.* **2020**, *4*, 42–55. [CrossRef]
44. Vanhoof, J.; Van Petegem, P.; De Maeyer, S. Attitudes towards School Self-Evaluation. *Stud. Educ. Eval.* **2009**, *35*, 21–28. [CrossRef]