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Running head: ECE QUALITY IN KINDERGARTEN

Investigating Quality Indicators of Early Childhood Education Programs in Kosovo,  
Ukraine and Finland

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Keywords: ECE quality; structural characteristics; teacher-child interactions; CLASS Pre-K; LMICs

Short Abstract

The present study explored variation in structural and process indicators of ECE quality in two Eastern European LMICs, Kosovo and Ukraine. We also include Finland because governments in Kosovo and Ukraine show a particular interest in the Finnish education model to inform policy reforms. Participants were kindergarten teachers ( $n=177$ ) from these three countries who were observed in their classrooms and asked to complete questionnaires. Results indicated variability in ECE quality at various levels, both within and across the three countries. Directions for future research and implications for practice and policy development in LMICs are discussed.

### Abstract

The existing literature on early childhood education (ECE) quality is predominantly from the US or other developed countries. In low-and-middle-income countries (LMICs), systematic research on ECE quality, however, is very limited. In the present study, we explore variation in structural and process indicators of ECE quality in two Eastern European LMICs, Kosovo and Ukraine, using the Classroom Assessment Scoring System Pre-K (CLASS) as a measure of process quality for the first time in these countries. We also include Finland because governments in Kosovo and Ukraine show a particular interest in the Finnish education model to inform policy reforms. Participants were kindergarten teachers ( $n=177$ ) from these three countries who were observed in their classrooms and asked to complete questionnaires. Results indicated variability in ECE quality at various levels, both within and across the three countries. Directions for future research and implications for practice and policy development in LMICs are discussed.

*Keywords:* structural quality; process quality; CLASS Pre-K; kindergarten; LMICs

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In low-and-middle-income countries (LMICs), more than 200 million children under age 5 will not fulfil their developmental potential due to poverty, poor nutrition and lack of stimulation (Grantham-McGregor et al. 2007). At the same time, there is strong evidence that high-quality early childhood education (ECE) is key to improving children's development with beneficial effects on cognitive, social and emotional skills and well-being (OECD 2017a). Attention to ECE services has increased globally and is reflected in the 2030 Agenda for Sustainable Development. In the past decade, progress was made towards raising participation in pre-primary education (from 63% in 2010 to 69% in 2017; United Nations 2019). Higher rates, however, did not necessarily translate into actual learning for all children (United Nations 2019; Wolf et al. 2018). To tackle this problem, the Sustainable Development Goal for Education (SDG 4) goes beyond access and shifts focus toward quality of educational services, in particular, for LMICs.

There are at least two gaps in the current literature on ECE quality that hinder LMICs in moving toward evidence-based monitoring and improvement of ECE quality (Wolf et al. 2018; World Bank 2019). First, there is a lack of empirical studies from LMIC contexts. Most prior studies on ECE quality were conducted in developed North American or Western European settings. Although a variety of educational contexts were investigated in these settings, including those with low resources, findings may not generalize to educational contexts in LMICs. Second, most prior research reported single-country studies, often using different indicators and measures of ECE quality, thus, making comparisons difficult.

In the present study, we aim to contribute to the scarce literature on ECE quality in LMICs by exploring indicators of ECE quality in kindergarten classrooms in Kosovo

and Ukraine, two of the poorest LMICs in Eastern Europe (World Bank 2015). In both countries, the predominately public network of ECE faces a number of challenges to providing quality services (Gjelaj, Rraci, and Bajrami 2018; Haxhikadrija, 2019; Putcha, Neuman, Zaplotynska, and Sofiy 2018). While ECE services were generally perceived as less important than schools, attention to ECE increased in Kosovo and Ukraine (Haxhikadrija, 2019; Putcha et al. 2018). In drafting new guidelines for the delivery of services, governments of both nations focus on improving teacher preparation and modernizing methods of teaching and learning (Haxhikadrija 2019; Putcha et al. 2018). Since the Finnish education model inspires the reform debate in Kosovo and Ukraine (Shala and Grajcevcic 2018; Shyyan et al. 2018), we also included Finland in the study. We use the same indicators and measures of ECE quality to make comparisons across countries. Results can inform policy planning and strategy for improving ECE quality in LMICs.

### **Conceptualizing ECE quality**

ECE quality is a multidimensional, complex construct that includes structures and processes of ECE provision (European Union Quality Framework 2014; OECD 2017a). In general, it is thought that structural indicators provide the contextual framework within which the processes that children experience operate (Burchinal 2018). Structural characteristics include, for example, class size, child-teacher ratio, levels of pre-service training and in-service professional development, and classroom composition factors (e.g., Ansari and Pianta 2019; Buell, Han, and Vukelich 2017; Early et al. 2007; Manning, Garvis, Fleming, and Wong 2017; Pianta et al. 2005; Slot, Leseman, Verhagen, and Mulder 2015). Many countries focus on structural standards as key strategies for improving ECE programs (Early et al. 2007; Slot et al. 2015).

Process quality influences children's everyday experiences in the classroom and

is often referred to as quality of interactions between teachers and children (Hamre et al. 2013; Pianta et al. 2005). The Teaching-through-Interactions (TTI) conceptual framework<sup>1</sup> describes three domains of interactions that are particularly relevant for children's learning: emotional support (emotional classroom climate and support of children's emotional and academic needs), classroom organization (organisation of routines and management of children's behaviours), and instructional support (activities teachers engage children in for their learning, and how they scaffold children's learning) (Hamre et al. 2013). A plethora of research has demonstrated that these domains of teacher-child interactions are related to children's academic, behavioural, and social-emotional skills in a variety of educational contexts (e.g., Burchinal et al. 2008; Curby et al. 2009; Leyva et al. 2015; Pakarinen et al. 2011).

### **Variations in ECE quality across developed countries and LMICs based on structural and process indicators**

In developed countries, there is some consensus about what structural aspects and processes contribute to high-quality ECE services (European Union Quality Framework 2014; OECD 2017a; OECD 2018a). Nevertheless, structural and process indicators of ECE quality show considerable variation across countries. For example, teacher preparation, class size or child-teacher ratio all vary across countries (OECD 2018a). In many developed countries, regulations set the maximum class size between 23-25 children per class for children at age 4, with one or two adults per class (EURYDICE Report 2019). These regulations are based on research from developed North American or Western European ECE settings revealing, demonstrating that small classes and low child-teacher ratios facilitate high-quality teacher-child interactions

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<sup>1</sup> The TTI conceptual framework builds on research with the CLASS (for an overview, see Hamre et al., 2013).

(Bowne, Magnuson, Schindler, Duncan, and Yoshikawa, 2017). ECE programs in LMICs are in sharp contrast to these standards with class sizes often up to 40 or 50 children and with a wide range of ages of children (Bartlett 2010). For example, a study from Vietnam reported a focus of teachers on organizing the classroom whereas less attention was given to students' understanding of the lesson which was attributed to the large class size (Hoang, Holopainen, and Siekkinen 2018).

In addition, it has been suggested that classroom composition may affect teachers' behaviors in the classroom (Ansari and Pianta 2019; Buell et al. 2017). For example, classroom gender composition has been associated with aspects of process quality. In a recent study, the proportion of boys in the classroom was negatively related to the quality of teachers' instructional support and classroom organization (Buell et al. 2017). Particular classroom demographics might place additional demands on teachers (Ansari and Pianta 2019).

To date, most research on ECE quality has included a single, usually North American or Western European setting. Cross-country comparisons can be useful in exploring the universality of educational constructs and measures (Klassen et al. 2009). In addition to comparing certain variables across countries (the focus of most cross-country research), exploring the country-specific relationships between variables is an important unit of analysis (Cole and Packer 2011). This is in line with recent literature that suggests to view ECE quality as a relative term, embedded in the country specific context in which ECE services operate (Fleer, Hedges, Fleer-Stout, and Hanh 2018). One recent study (Slot, Lerkkanen, and Leseman 2016), for example, compared associations between structural characteristics and measures of process quality across five European countries (England, Finland, Germany, Netherlands, and Portugal) and found differences in the pattern of associations. Yet, cross-country comparisons of ECE

quality indicators and their associations are still scarce and usually pay limited attention to LMICs.

### **The context for early childhood education in Kosovo and Ukraine**

Kosovo and Ukraine were part of former socialist countries in Eastern Europe (Kosovo: Yugoslavia; Ukraine: Soviet Union) and experienced major political and economic transitions since the 1990s. Politically, both countries declared independence and became republics. Economically, they experienced severe downturns as each faced civil, armed conflicts. Although their economies have grown over recent years, the countries still rank among the poorest in Eastern Europe (World Bank 2015).

At the onset of the transitions, access to education was free and compulsory which resulted in high attendance rates. The economic decline, however, had devastating effects on educational services. For example, many previously state-funded ECE institutions were closed which resulted in an enrollment decline (Shyyan, Shiyan, and Sofiy 2018). The numbers remain low today (Kosovo: 34%; Ibra-Zariqi 2019; Ukraine: 57%; Shyyan et al. 2018) and are in contrast to enrolment trajectories in OECD countries that increased from, on average, 75% in 2005 to 85% in 2016 (OECD 2018b). Recently, ECE has become a priority in Kosovo and Ukraine and part of national education policies with steps being taken to increase access to public ECE services (Coalition of NGOs for Child Protection 2014; Haxhikadrija 2019; Putcha et al. 2018).

The expansion of ECE provision, however, is hindered by structural challenges that affect the quality of ECE services, such as lack of initial teacher preparation and opportunities for in-service professional development, difficulty in recruiting qualified teachers, challenging workloads, low pay, and low status (Gjelaj et al. 2018; Haxhikadrija 2019; Putcha et al. 2018). Like in many LMICs, government expenditures



on education are low. In Kosovo, 4.1% of GDP was assigned to education of which 0.1% were allocated to ECE (Ibra-Zariqi 2019; Shala and Grajcevcic 2018). Ukraine spent 6.4% of GDP on education, including 0.9% on ECE (National Accounts on Education 2015). Although public expenses cover wages of teachers, they are often underpaid, reflecting a typical situation of teachers in LMICs (Hall-Kenyon, Bullough, MacKay, and Marshall 2014). In addition, teaching approaches often do not reflect current knowledge regarding developmentally appropriate practice (OECD 2017b). In Kosovo and Ukraine, instruction is mostly teacher-directed, often because teachers lack knowledge and training in child-centered practices (Kadriu and Gougeon 2014; Ognevyuk 2016). Despite efforts in both countries to improve the quality of ECE (Beka 2017; Kadriu and Gougeon 2014; Ognevyuk 2016), lack of an adequate system for monitoring quality requirements hinders development and implementation of consistent high-quality educational services (Haxhikadrija 2019; Shyyan et al. 2018). To inform policy planning and strategy for improving ECE quality, there is a need for systematic research to conceptualize and develop metrics of ECE quality in these two countries.

### **Early childhood education in Finland**

The study also includes Finland since the governments in Kosovo and Ukraine show a strong interest in the Finnish education model (Kosovo: Ministry of Education, Science, and Technology, 2018; Ukraine: Ministry of Education and Science of Ukraine 2018). In Finland, ECE is child-centred with a focus on learning through play to foster children's development and well-being (Finnish National Board of Education 2016). The goal is to encourage children's learning by helping them develop the skills needed for analysing, synthesizing and integrating knowledge and experiences (e.g., Salminen, 2017; Repo et al. 2020; Vlasov et al. 2019).

In Finland, a strong emphasis is placed on developing the ECE workforce. Qualification requirements for ECE professionals are high (i.e., a BA degree from a university is required). In addition, participation in in-service professional development is mandatory and incentivized. As Kosovo and Ukraine aim to align their education systems with those of other European countries, one key strategy for implementing educational change is policy- and model-borrowing from foreign examples (Shala and Grajcevci 2018; Shyyan et al. 2018). The Finnish ECE system informed the “New Ukrainian School”, an educational reform implemented in 2018 (Ministry of Education and Science of Ukraine 2017). Substantial support for teacher preparation is provided by the Finnish Government in Ukraine<sup>2</sup>. Similarly, in Kosovo model schools<sup>3</sup> were opened following the Finnish education system with the goal of informing educational reform.

### **The present study**

The aim of the present study is to contribute to the emerging educational research on ECE quality in LMICs (e.g., Hoang et al. 2018; Wolf et al. 2018) by exploring variation in indicators of ECE quality in Kosovo and Ukraine, two of the poorest LMICs in Eastern Europe. The study also includes Finland to explore similarities and differences in structural and process quality indicators that may inform education policy reform and practice in Kosovo and Ukraine. Overcoming limitations of prior single-country studies that often use different indicators and measures of ECE quality, we used a common set of structural variables suggested in prior research to explain variance in educational processes and assessed process quality with the same

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<sup>2</sup> An agreement was signed between the Ukrainian Ministry of Education and the Finnish Ministry of Foreign Affairs.

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observational measure, the Classroom Assessment Scoring System – Preschool Version (CLASS Pre-K; Pianta, La Paro, and Hamre 2008). In accordance with prior research using the CLASS (e.g., Hamre et al. 2013; Leyva et al. 2015; Pakarinen et al. 2010; Suchodoletz et al. 2019), we used confirmatory factor analysis to test the fit of the measure's three-domain structure. Moreover, we explored variation in ECE quality based on structural and process indicators, and in the links between structural and process quality indicators.

## Method

### Participants

The study protocol was approved by the Institutional Review Board of the authors' universities prior to data collection. In addition, it was reviewed and approved by local institutions and authorities in Kosovo and Ukraine. Participants were recruited in ECE centers. Convenience sampling was used to identify ECE centers. Study goals were explained to the center director. Of the directors who were approached by phone or email, 66% in Kosovo, 60% in Ukraine, and 85% in Finland agreed to participate. Teachers participated on a voluntary basis, returned written consent, and received a small compensation.

Data of the present study came from 177 teachers (Kosovo:  $n=60$  in 10 centers; Ukraine:  $n=61$  in 16 centers; Finland:  $n=54$  in 34 centers). All teachers were female and of the country's nationality. The language of instruction was the country's dominant language. Teachers were, on average, 40 years old in Kosovo ( $SD=10.05$ ) and Ukraine ( $SD=11.29$ ), and 44 years old in Finland ( $SD=9.55$ ). The majority of teachers worked in the field for six years or longer (Kosovo: 80%; Ukraine: 77%; Finland: 76%). Thirty percent of teachers in Kosovo and 26% of teachers in Ukraine completed vocational training. All other teachers had at least a BA degree though not necessarily in education.

In Finland, all teachers had a BA or higher educational degree. The average class size was 23 children in Kosovo ( $SD=4.67$ ), 29 children in Ukraine ( $SD=5.21$ ) and 15 children in Finland ( $SD=6.40$ ).

### **Measures and Procedures**

*Process quality.* The CLASS Pre-K (Pianta et al. 2008) was used as a standardized measure to assess process quality. The CLASS focuses on three domains of teacher-child interactions, i.e., emotional support, instructional support, and classroom organization, that are relevant to children's everyday experiences in the classroom (Hamre et al. 2013). Observed processes in the classroom were evaluated on 10 dimensions. The coding used a 7-point scale (1 or 2 = low quality; 3, 4 or 5 = moderate quality; 6 or 7 = high quality) and was determined according to the CLASS protocol and manual (Pianta et al. 2008).

Classrooms were observed during the spring of the kindergarten year (Kosovo: 2016; Ukraine and Finland: 2017). Four observation cycles of approximately 20 minutes each ( $M=19.50$ ;  $SD=2.18$ ) were distributed across the morning and covered all activities except outdoor play. Observers completed a two-day intensive training by a licensed CLASS Pre-K trainer, followed by an online reliability test. Only observers who passed the test (i.e., achieved at least 80% agreement within one scale-point deviation; average agreement was 87.6%) were admitted to the study. In Kosovo and Ukraine, observations were done in the classroom whereas in Finland classroom activities were video-recorded and observations were done from the videos that were split in observation cycles for coding. In Kosovo, 29% of observation cycles were double coded by two independent observers. The average adjacent agreement<sup>4</sup> was

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<sup>4</sup> agreement within one scale point-deviation

94%. In Ukraine, limited resources did not allow for multiple observers being trained in the CLASS, which is why all observations were completed by one person. To ensure reliability with the manual, the observer completed monthly coding trainings using calibrating videos provided by the developers of the CLASS (average adjacent agreement was 96%). In Finland, prior research validated the CLASS (Pakarinen et al. 2010). In the current sample, 20% of video segments were double coded by two independent raters. The adjacent agreement was, on average, 80%.

*Structural characteristics.* Teachers completed a questionnaire addressing the same demographic information across all three countries (Table 1): teacher age and professional training; total number of children enrolled in the classroom (class size) and gender composition of the classroom (classrooms were given a percentage score for the proportion of boys). Teacher-child ratio was determined based on the CLASS protocols where observers registered the number of children and adults present during each observation cycle.

### **Analytic approach**

Confirmatory Factor Analyses (CFAs) tested the three-domain structure of the CLASS according to the TTI framework (Hamre et al. 2013). Separate CFAs were run for each country and sample of kindergarten teachers. Prior literature using the CLASS in international contexts (Leyva et al. 2015; Pakarinen et al. 2010; Suchodoletz et al. 2019) and modification indexes were used to make decisions regarding adjustments. Associations between structural characteristics and process quality were tested in a structural equation modeling framework. The models, one for each country, included teacher age, professional training, class size, percentage of boys in the classroom, and teacher-child ratio.

Because of the small sample size within each country, our general analytical approach was to use Bayesian estimation. In Bayesian estimation, an actual value is compared with a distribution of predicted values from posterior probability distributions<sup>5</sup> (Muthén 2010; Raudenbush and Bryk 2002; Song and Lee 2008). Model fit is estimated through posterior predictive checking using the posterior predictive  $p$ -value (Kacker, Forbes, Kessel, and Sommer 2008; Kruschke 2011). Posterior predictive  $p$ -values between .05 and .95 suggest that the statistical model fits the realized data and can be accepted; extreme values (i.e., close to 0 or close to 1) indicate poor model fit (Kacker et al. 2008). Credible intervals indicate significance of the estimates; credible intervals that do not contain zero indicate significant results. Because Bayesian estimation does not provide modification indexes, in the initial phase of the CFAs, models were also run using MLR. All models were estimated using Mplus version 8.1.

### Results

The three-factor structure of the CLASS was tested first. Initial models included all 10 dimensions (Table 2 for descriptive statistics), however, model fit was poor. In prior international research using the CLASS, the dimension Negative Climate showed limited discriminant validity (Bihler et al. 2018; Pakarinen et al. 2010; Suchodoletz et al. 2019). Bihler et al. (2018) suggested an alternative strategy of dichotomizing Negative Climate (negative behaviors were observed or not) which, in the present study, did not improve model fit. Consequently, we excluded the dimension from the analyses, an approach that was used in prior research (Pakarinen et al. 2010; Suchodoletz et al. 2019).

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<sup>5</sup> We used Markov chain Monte Carlo algorithm to estimate the probability distributions.

Further adjustments were made to the models. In all three samples, the residual variance of the dimensions Positive Climate and Teacher Sensitivity were allowed to correlate. In the Ukrainian sample, the residual variance of the dimension Concept Development was allowed to correlate with the residual variance of the dimensions Quality of Feedback and Language Modeling. In the Finnish sample, the residual variance of the dimensions Behavior Management and Productivity were allowed to correlate. This has resulted in posterior predictive  $p$ -values between .05 and .95 for the samples from Kosovo (.27) and Finland (.06), suggesting that the statistical model fit the realized data and could be accepted. For the sample from Ukraine, the posterior predictive  $p$ -value (.00) indicated poor model fit. Further modification indexes suggested a cross-loading of the dimension Behavior Management on two factors, Classroom Organization and Instructional Support, suggesting low discriminant validity. For theoretical (according to the TTI framework, Behavioral Management is to load on the domain Classroom Organization) and statistical reasons (the standardized factor loadings were  $>1.00$  [Classroom Organization: 1.90; Instructional Support: -1.12]), we excluded the Behavior Management dimension and repeated the CFA for the sample from Ukraine. The resulting posterior predictive  $p$ -value (.50) suggested acceptable model fit.

Descriptive statistics (Tables 1 and 2) suggest substantial variation in ECE quality within and across the three countries. With regard to structural characteristics, large variation between countries emerged in class size and teacher-child ratio (Table 1). Class sizes in Ukraine ( $M=29.21$ ,  $SD=5.21$ ) were twice as large as in Finland ( $M=14.71$ ,  $SD=6.40$ ). In Kosovo, class sizes were on average 23 children ( $SD=4.67$ ). Similarly, teacher-child ratio was more favorable in Finland ( $M=6.73$ ,  $SD=2.53$ ) compared to Ukraine ( $M=14.05$ ,  $SD=5.23$ ) and Kosovo ( $M=12.22$ ,  $SD=4.40$ ). With

regard to process quality, variation in the 10 CLASS dimensions was found. In general, means were higher in Finland compared to the other two countries (Table 2). In particular, the dimensions that form the instructional support domain, show that the overall level of instructional support was low in Kosovo (means between 1.39 and 1.64) and Ukraine (means between 1.49 and 2.28) whereas it was of moderate quality in Finland (means between 3.21 and 3.65).

Next, we examined associations between structural characteristics and the domains of teacher-child interactions (Figures 1-3). There were no significant associations in Kosovo (Figure 1). Class size was negatively associated with emotional and instructional support in Ukraine (Figure 2). In Finland, teacher age, class size, and percentage of boys in the classroom were negatively related to emotional support (see Figure 3). Older teachers, teachers in larger classes, and teachers in classes with a higher percentage of boys provided lower levels of emotional support. Furthermore, Finnish teachers in classrooms with a higher percentage of boys provided lower levels of classroom organization (Figure 3).

### **Discussion**

The present study explored variation in ECE quality based on structural and process indicators in two LMICs in Eastern Europe, Kosovo and Ukraine, thus adding to the scarce educational research in low-resource contexts. The study also included Finland whose ECE system informs educational reform in Kosovo and Ukraine. While prior research often reported single-country studies and used different indicators and measures, this study included a common set of structural variables and used the same measure of process quality.

In line with prior single-country studies, we found within-country variation between classrooms in regard to structural and process quality indicators in all three



countries. We also found variation across the three domains of teacher-child interactions. Most classrooms were scored in the moderate quality range for the domains emotional support and classroom organization. In contrast, the dimensions assessing instructional support were scored lower, suggesting that teachers struggle with providing children with high-quality learning support. Our findings replicated a general pattern of CLASS data in previous research (e.g., Hamre et al. 2013; Leyva et al. 2015; Pakarinen et al. 2010; Suchodoletz et al. 2019).

We also found substantial variability across countries; all CLASS dimensions were scored consistently higher in Finland than in Kosovo and Ukraine. Our results suggest differences in the approaches to teaching young children. The higher scores on the CLASS measure in Finland may reflect the focus on a child-centered provision of services, recognizing teacher-child interactions as one key-competence of ECE professionals (e.g., Repo et al. 2020; Vlasov et al. 2020). In contrast, in Kosovo and Ukraine it is likely that teachers adhere to more traditional teacher-directed practices (Kadriu and Gougeon 2014; Ognevyuk 2016) which may have resulted in lower scores on the CLASS measure. An important step toward improving the quality of ECE services in Kosovo and Ukraine may therefore be an increased recognition of the importance of child-centered teaching practices for children's development and learning. One example may be creating a vision for ECE that values learning through play, as emphasized in the Finnish ECE system (Finnish National Board of Education 2016). This may be facilitated through teacher professionalization which is a key driver of quality improvement in ECE services internationally (Sims & Waniganayake, 2015).

Variation across countries was also found regarding associations between structural and process indicators. In Kosovo, no significant associations between any structural characteristics and process quality were found. Similarly, in Ukraine,

structural factors were largely unrelated to process quality, except class size negatively associated with emotional support and instructional support. In our study, the average class size in Ukraine was the largest among the three samples. Although policy limits class sizes to 15-20 children, (Ministry of Education and Science of Ukraine 2001) class sizes are actually much larger (1.5-2 times more) (Putchá et al. 2018). Our results suggest that the combination of a teacher-centered pedagogy and large class sizes may have hindered teachers' ability to provide individualized support to all children. This has also been observed in other LMICs, for example, Vietnam, where large class sizes and teacher-led practices resulted in teachers' lack of awareness of children's academic and emotional needs (Hoang et al. 2018).

In Finland, we found multiple significant associations between structural characteristics and process quality, suggesting that structural characteristics explain variation in the quality of teacher-child interactions. In Kosovo and Ukraine, in contrast, it is possible that more distal influences (i.e., economic instability, low investment in education, and challenges in implementing educational reforms), might have stronger effects on teachers' ability to provide high-quality teacher-child interactions. For example, many teachers engaged in tasks unrelated to teaching due to a lack of financial resources, thus, leaving teachers with less time in the classroom (Kutsyuruba 2011). Teachers in Kosovo and Ukraine may also struggle with keeping up with the many curricular reforms recently introduced (Kosovo Education and Employment Network 2018).

Alternatively, it is possible that other factors, such as differences in teachers' expectations for student behavior and achievement, explain variation in process quality indicators across countries. Interactions between teachers and children are influenced by cultural belief systems about childhood, child development, and goals and functions of

ECE services (Fleer et al. 2018; Hoang et al. 2018). Thus, it is important to contextualize classroom processes. In Finland, the child-centered approach guides daily practice. Teachers encourage children to make choices based on their interests, emphasizing the “child’s way of acting” (Salminen 2017; Repo et al. 2020). Such values are also reflected in the conceptual framework underlying the CLASS (Hamre et al. 2013). In contrast, in former socialist countries, educational pedagogy remains predominately teacher-directed and children are expected to follow teachers’ instructions (Kadriu and Gougeon, 2014; Kutsyuruba 2011). Thus, an important aspect considered in the CLASS (student needs guiding teacher interactions) may not be reflected in the belief system of the cultures examined. This relates to a major criticism of ECE quality research, i.e., the question whether approaches to define and measure quality are universal or vary significantly by context (Fleer et al. 2018).

The study is not without limitations. Although the data provides moderate support for the three-domain structure of process quality as measured by the CLASS, significant modifications to the factorial structure were necessary to reach acceptable model fit. In the sample from Ukraine, the dimension Behavioral Management was omitted. It is possible that indicators and behavioral markers of these dimensions did not adequately reflect differences in teacher-child interactions in these samples. The limitations in using the CLASS in Kosovo and Ukraine reflect problematic aspects of using measures of ECE quality in diverse contexts (Fleer et al. 2018; Hoang et al. 2018). Most of the available measures, including the CLASS, were developed in and reflect the cultural context of ECE in the US. Using the measure in LMICs may disadvantage the ECE settings in these countries because “the basic coding structure normalizes conditions of quality for more richly resourced contexts.” (Fleer et al. 2018 p. 70)

A further limitation is the small sample size within each country and the sample selection, although convenience sampling has also been used in prior research (Hoang et al. 2018; Suchodoletz et al. 2019). Conclusions drawn are specific to the sample of teachers included in the respective study, however, important information is generated about indicators of ECE quality that may differ across countries. There is a need for more research to shed light on ECE quality indicators within local frameworks of ECE (Fleer et al. 2018).

Speculating about implications for ECE in Kosovo and Ukraine, results may inform policy and practice. While both countries use Western education systems as models to inform educational reforms, the present findings suggest the necessity to modify “borrowed” education models to fit the local conditions and structures (Shala and Grajevci 2018). Results may be used to develop contextualized instruments to monitor ECE quality and to create conditions that support high-quality educational practices. Many LMICs, including Kosovo and Ukraine, have not implemented a regular quality monitoring system of their education system (World Bank 2019). Reliable instruments may help distinguish between effective and ineffective teaching and be used to guide practice. The World Bank (2019) recently published a manual for measuring ECE quality in LMICs, called TEACH, that built upon the CLASS but adapted the framework to contextualize the measure to low-resource contexts. TEACH may be better suited for providing actionable guidance for teachers to improve their practices within these challenging contexts. Therefore, while using measures of ECE quality on an international scale can help inform educational policy, it will be important for future research to create locally developed assessment tools of ECE quality that may yield more contextually relevant results (Fleer et al. 2018).

**Conclusion**

This study presents a first attempt to explore variation in structural and process indicators of ECE quality in two European LMICs, Kosovo and Ukraine. Overall, teacher-child interactions were of moderate-to-low quality in these two LMICs, and of consistently lower quality than in Finland. In addition, there was variation in the pattern of associations between structural characteristics and process quality. While many LMICs attempt to reform and improve their education systems by adopting educational policies and practices from economically advantaged countries, our findings highlight the need to consider the specific local political and economic factors when implementing educational reforms. With regard to the applicability of the CLASS instrument, our findings highlight the need to advance the adaptation of existing measures and the development of new instruments alike to ensure that measures are culturally relevant, easy to implement, and provide actionable evidence to guide teachers in improving their practices and policymakers in establishing effective professional development programs.

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Table 1. Descriptive statistics of teacher- and classroom-level structural characteristics.

	Kosovo			Ukraine			Finland		
	<i>M</i>	<i>SD</i>	Range	<i>M</i>	<i>SD</i>	Range	<i>M</i>	<i>SD</i>	Range
Teacher-level characteristics									
Age <sup>a</sup>	39.78	10.05	22-61	40.43	11.29	19-65	44.11	9.55	24-60
Education <sup>b</sup>	1.25	0.94	0-2	1.28	0.86	0-2	1.16	0.37	1-2
Classroom-level characteristics									
Class size	23.22	4.67	11-36	29.21	5.21	17-38	14.71	6.40	6-36
Percentage boys	53.05	12.48	33.33-100	51.54	9.92	35.71-80.77	50.86	10.46	27.27-73.33
Teacher-child ratio <sup>c</sup>	12.22	4.40	4.33-23.00	14.05	5.23	5.33-23.50	6.73	2.53	2.13-15.00

*Note.* <sup>a</sup> in years. <sup>b</sup> 0=Vocational/technical training, 1=Undergraduate degree (BA), 2=Graduate degree (MA). <sup>c</sup>Assessed during the CLASS observation cycles.

Table 2. Descriptive statistics for the CLASS Pre-K dimensions in each country.

	Kosovo			Ukraine			Finland		
	<i>M</i>	<i>SD</i>	Range	<i>M</i>	<i>SD</i>	Range	<i>M</i>	<i>SD</i>	Range
Positive climate	4.88	1.08	2.25-6.75	5.33	0.83	3.50-7.00	5.48	0.81	4.00-7.00
Negative climate <sup>a</sup>	6.84	0.29	5.75-7.00	6.66	0.51	5.00-7.00	6.90	0.23	6.00-7.00
Teacher sensitivity	4.49	1.19	2.00-7.00	4.84	1.10	2.25-6.75	5.52	0.73	3.75-7.00
Regard for student perspective	4.23	0.99	2.00-6.00	3.09	0.84	1.75-5.00	4.56	0.86	2.75-6.00
Behavior management	5.53	1.08	3.25-7.00	5.09	0.87	3.00-6.75	5.71	0.52	3.75-6.50
Productivity	4.87	0.94	2.75-6.25	5.72	0.66	4.00-7.00	5.74	0.59	4.00-7.00
Instructional learning format	3.91	0.87	2.50-6.25	3.38	1.16	1.50-5.75	5.01	0.68	3.25-6.25
Concept development	1.39	0.57	1.00-3.25	1.49	0.52	1.00-2.75	3.21	1.00	1.65-5.50
Quality of feedback	1.57	0.51	1.00-2.75	1.83	0.75	1.00-3.50	3.47	0.85	2.00-5.50
Language modeling	1.64	0.45	1.00-3.00	2.28	0.93	1.00-4.25	3.65	0.82	2.25-5.75

*Note.* <sup>a</sup>recoded (7 reflects no observed negative climate)



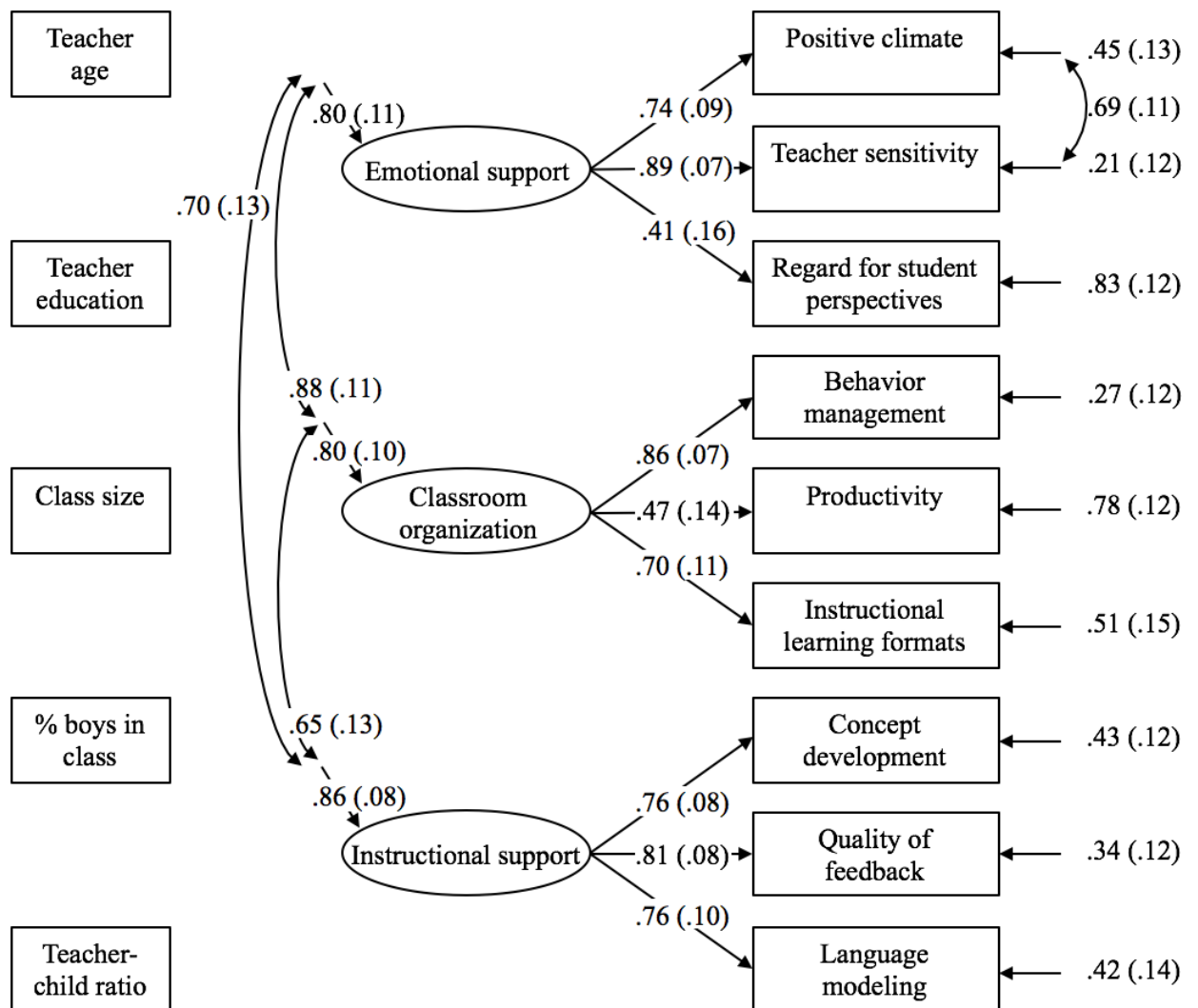


Figure 1.  
Final structural equation model: Kosovo.

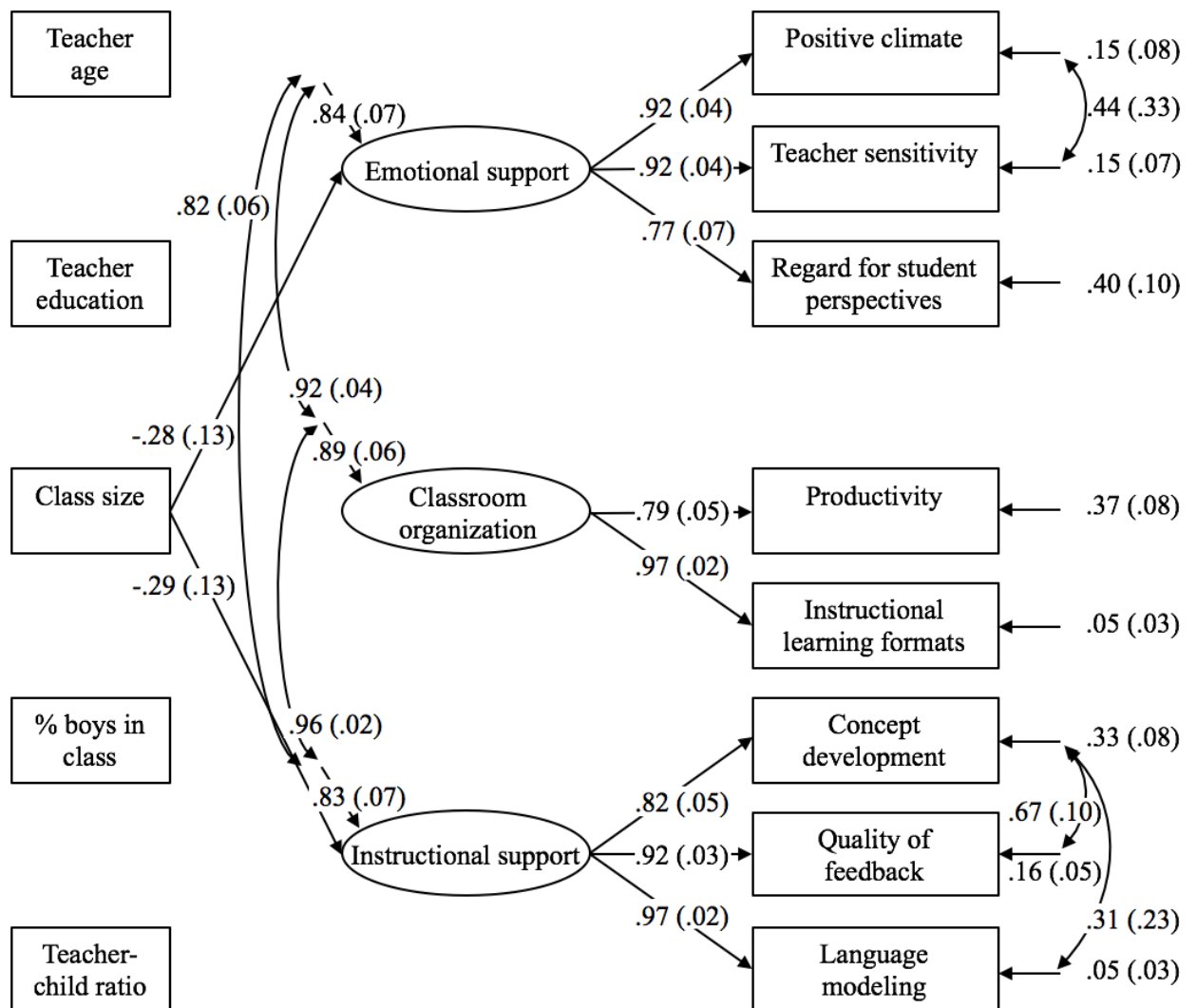


Figure 2.  
Final structural equation model: Ukraine.



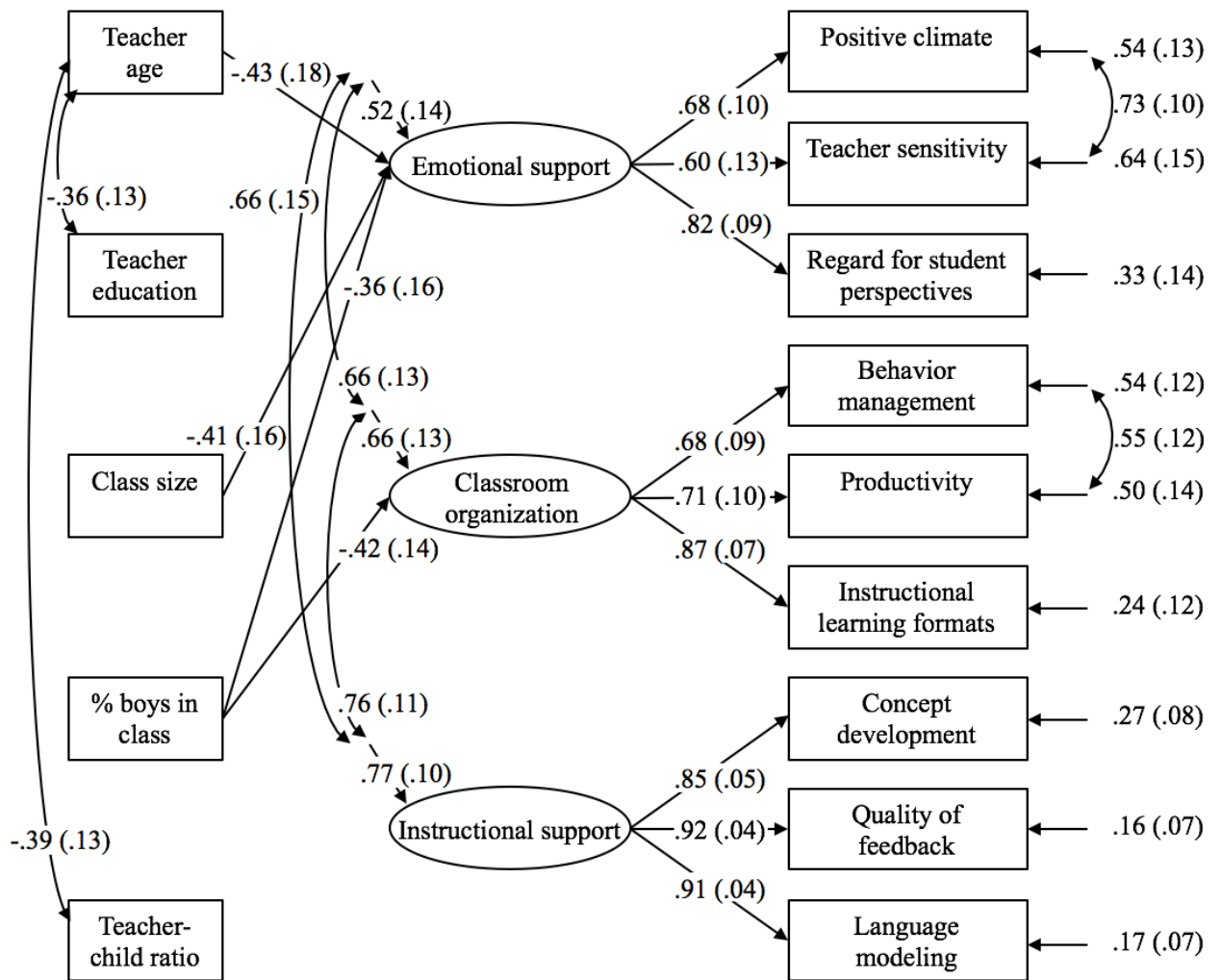


Figure 3.  
Final structural equation model: Finland.