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Psychometric properties of the School Kindness Scale in Hong Kong, mainland China, and the Philippines

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Abstract

Studies have shown that the School Kindness Scale (SKS) has adequate psychometric properties in different societies such as Canada, Turkey, and the Philippines. However, there is scarce evidence on the psychometric validity of this scale across multiple societies and educational contexts. This study explores the cross-national invariance of the SKS among high school students in the Philippines, Hong Kong, and mainland China. Results showed that the modified unidimensional model of school kindness with correlated error terms on item number 2 and 3 had the most optimal fit. There was evidence supporting partial invariance of the modified unidimensional model of school kindness across setting and year level, and full invariance across gender. Whereas school kindness also demonstrated positive correlations with perceived academic performance in Hong Kong and mainland China, this construct was linked to higher emotional and social engagement in math in all contexts.

KEYWORDS

adolescents, emotional engagement, perceived academic achievement, school kindness, social engagement

1 | INTRODUCTION

Kindness has been conceptualized as positive behaviors, gestures, and emotions displayed toward another person, which aim to voluntarily help the other without any expectation of reciprocity or receiving external rewards (Baldwin & Baldwin, 1970; Knafo & Israel, 2012). The expression of kind acts has been related to altruistic love,

care, compassion, and doing good for others, recognizing that everyone needs empathy and attention (Peterson & Seligman, 2004). Kindness has also been linked to increasing social connectedness and maintaining interpersonal relationships with others (Andersen et al., 2008; Seppala et al., 2013). Past investigations have indicated that expressions of kindness result in greater well-being, higher levels of positive emotions, and lower levels of negative affect (Mongrain et al., 2018; Pressman et al., 2015; Shin & Lim, 2019).

There is a growing body of research showing the beneficial impacts of kindness in the school context. Research has demonstrated that students who perceive kindness in their schools tend to have higher levels of life satisfaction and sense of school belonging (Binfet et al., 2016; Lee & Huang, 2021) as well as greater academic self-efficacy and academic engagement (Datu & Park, 2019; Binfet et al., 2016). Although kindness is generally perceived as a positive and desirable behavior, it may be important to examine more domain-specific forms of this character strength since it may be conceptualized differently by individuals depending on their developmental stages (e.g., children vs. adolescents) and contexts (e.g., home vs. school). Binfet et al. (2016) have developed a five-item School Kindness Scale (SKS) to assess how children and adolescents perceive the practice and encouragement of kind acts in school settings.

While there is research supporting the applicability of the SKS among adolescents in Canada (Binfet et al., 2016), Turkey (Yurdabakan & Uz Baş, 2019), mainland China (Datu & Lin, 2021), and the Philippines (Datu & Park, 2019; Datu et al., 2022), none of these investigations have simultaneously examined the factor structure of school kindness across multiple cultural contexts. Important socio-contextual differences have been noted across developmental contexts that may influence people's attitudes, cognitions, and behaviors (Hofstede, 2011). Additionally, although Yurdabakan and Uz Baş (2019) have shown that the SKS' scores were invariance across gender based on differential item functioning values, to date, no study has investigated the configural (i.e., factor structure), metric (i.e., factor loadings), scalar (i.e., item intercepts), and strict (i.e., error covariances) measurement invariance of the SKS. Establishing measurement invariance is important given that school kindness tends to differ by gender and grade level (Binfet et al., 2016). Finally, whereas school kindness has been associated with positive psychological well-being outcomes such as life satisfaction and resilience (Binfet et al., 2016; Datu et al., in press; Yurdabakan & Uz Baş, 2019), there is sparse research examining how school kindness is linked to positive academic outcomes (Datu & Park, 2019).

The present study, therefore, aims to generate evidence about the psychometric validity and measurement invariance (i.e., configural, metric, scalar, and strict) of the SKS for children and adolescents (Binfet et al., 2016) among high school students in mainland China, Hong Kong, and the Philippines. Although the three settings may be generally classified as collectivistic societies, these societies have notable socio-contextual differences. Hofstede et al. (2010) compared 70 countries, including mainland China, Hong Kong, and the Philippines, and found specific differences on six cultural dimensions (i.e., power distance, collectivism, masculinity, uncertainty tolerance, long-term orientation, and indulgence). Compared to mainland China and Hong Kong, there is greater power distance (i.e., beliefs about the unequal or unequal distribution of power in a society), emphasis on uncertainty tolerance (i.e., tolerance for ambiguous or uncertain events), and short-term orientation (i.e., preservation of time-honored traditions and customs) in the Philippines. Mainland China, on the other hand, scored higher on long-term orientation (i.e., adapting customs and traditions based on the situation), collectivism (i.e., actions and decisions are made in consideration of the larger group instead of one's personal reasons), and masculinity (i.e., preference for masculine-related traits such as achievement, competitions, and success). Hong Kong, being a special administrative region in China's, scored lower on power distance and restraint (i.e., controlling gratification of desires and impulses), average on long-term orientation, and high on uncertainty tolerance (Hofstede et al., 2010). In terms of their socioeconomic standing and gross domestic product growth, the World Bank (2022) has classified Hong Kong as a high-income country, mainland China as an upper-middle income country, and the Philippines as a lower-middle income country.

Given these socio-cultural differences, it is important to examine the psychometric validity and measurement invariance of the SKS across mainland China, Hong Kong, and the Philippines. The present study can offer findings

on how students with distinct socio-contextual backgrounds perceive the promotion of kindness in their schools. Past studies have noted the importance of adolescents' developmental contexts in the promotion of prosocial behaviors and character strengths particularly kindness (Crone & Achterberg, 2021; Kinghorn et al., 2019).

To address the scarcity of studies examining the criterion-related validity of the school kindness constructs, we also examined the links of school kindness to perceived academic performance (PAP) and selected math engagement dimensions (i.e., emotional and social engagement; Wang et al., 2016). There is reason to argue that school kindness may relate to non-cognitive aspects of academic engagement as research (Martin & Rimm-Kaufman, 2015) has emphasized the role that external support plays in shaping engagement outcomes. Whereas emotional engagement refers to the extent to which students feel positive emotions during academic activities, social engagement pertains to the degree to which they actively interact with other students and teachers when performing academic tasks (Wang et al., 2016).

Academic engagement in math was selected as the criterion-related validity construct over other subject areas because math is foundational in many sciences, engineering, and technology disciplines (Martin & Rimm-Kaufman, 2015). Math education typically focuses on teaching well-defined concepts and procedures, which are then applied to content areas that address real-world problems and issues (e.g., science and engineering; Boaler, 2015; Fredricks et al., 2018). Math, therefore, performs a gate-keeping role for students who want to pursue STEM-related careers (Li et al., 2002). In the recent Program for International Student Assessment (PISA) results, students from various cities in mainland China (i.e., Beijing, Shanghai, Jiangsu, and Zhejiang; Scored 591) ranked first in terms of mathematics performance while Hong Kong participants (Scored 551) ranked fourth in 78 countries (OECD, 2019). The Philippines (Scored 353), however, ranked second to last among all countries in terms of mathematics performance, where girls and socio-economically advantaged students outperformed boys and those with low socioeconomic status (OECD, 2019).

1.1 | Conceptualization and consequences of school kindness

School kindness refers to students' perceptions of a positive school climate, characterized by the encouragement of prosocial behaviors and positive relationships in school contexts (Binfet & Passmore, 2019; Binfet et al., 2016). Binfet et al. (2021) noted that students tend to perceive school kindness as both interpersonal (e.g., improving the lives of others or helping others) and intrapersonal actions (e.g., sense of selflessness and altruism). Studies have also discovered that students' kind behaviors are usually centered around the themes of instructing and tutoring others or helping them with schoolwork (Binfet et al., 2021). Actions are perceived as kind when the intention and motivations behind the act are considered genuine and completed to benefit someone else in adolescents (Binfet & Passmore, 2019; Cotney & Banerjee, 2019).

The unidimensional factor structure of school kindness has been validated among students in Canada (Binfet et al., 2016), mainland China (Datu & Lin, 2021), Turkey (Yurdabakan & Uz Baş, 2019), and the Philippines (Datu & Park, 2019; Datu et al., 2022). Past studies have provided insights into the criterion-related validity of the SKS by assessing how its overall score was related to positive socio-emotional outcomes. For example, Canadian students who perceive greater kindness in their schools reported higher levels of classroom supportiveness, optimism, happiness, prosocial and social goals, and life satisfaction (Binfet et al., 2016). Further, students' perceived kindness was also found to be associated with teacher-reported empathy, social skills, and peer acceptance (Binfet et al., 2016). In another study involving middle school students in Turkey, school kindness was related to students' self-reported school climate, resilience, and satisfaction with family, school, friends, and other interpersonal connections (Yurdabakan & Uz Baş, 2019). Filipino high school students with high perceptions of school kindness tend to have higher academic engagement (Datu & Park, 2019) and well-being (Datu et al., 2022).

Aside from its links to optimal psychosocial outcomes, perceptions of kindness have also been associated with increased positive academic functioning. For example, students who report greater school kindness tend to be more

academically self-efficacious (Binfet et al., 2016) and engaged (Datu & Park, 2019). Perceptions of kindness in the university context positively predicted life satisfaction 3 and 6 months after among Chinese university students (Datu & Lin, 2021). However, none of the previous investigations simultaneously examined its factor structure and measurement invariance (i.e., configural, metric, scalar, and strict) across multiple countries. Establishing its factorial validity and stability across countries is important as this could pave the way for more cross-national and cross-cultural investigations that aim to identify similarities and differences in school kindness as well as ways on how to promote this climate in their respective learning environments.

Given the beneficial impacts of school kindness on students' psychological and academic well-being as well as the salience of socio-contextual factors in students' perception of kindness, the present investigation aims to examine the validity of the SKS among secondary school students in mainland China, Hong Kong, and the Philippines. Although past studies have examined the effects of school kindness in mainland China (Datu & Lin, 2021), Hong Kong (Datu et al., 2021a; Lee & Huang, 2021), and the Philippines (Datu & Park, 2019; Datu et al., 2022), to date, no investigation has simultaneously examined the SKS (Binfet et al., 2016) across adolescents from different societies. To provide evidence regarding the criterion-related validity of the SKS, we explore how school kindness relates to PAP as well as emotional and social engagement in math.

2 | METHODS

2.1 | Participants

There were 1692 high school students (M_{age} = 13.71; SD_{age} = 1.03) who participated in the study. The sample comprised 804 students from mainland China, 546 students from the Philippines, and 342 students from Hong Kong who were selected via convenience sampling. Among the student participants, 56% are males, 48% were Year 2 secondary school students, 21% were enrolled as Year 3 secondary school students, 16% were enrolled as Year 1 secondary school students, and 15% were Year 4 secondary school students. This study was part of a larger project that examines longitudinal predictors of math and science engagement in the three contexts.

2.2 | Measures

2.2.1 | School kindness

The 5-item SKS developed by Binfet et al. (2016) was used to measure students' perception of the frequency of kindness in their classroom and school (e.g., "Kindness happens regularly in my classroom") as well as the extent to which kindness is encouraged (e.g., "The adults in my school model kindness"). Participants rated the items using a 5-point scale ranging from 1 = "*disagree a lot*" to 5 = "*agree a lot.*" The reliability coefficients of the SKS using the overall and individual (i.e., Mainland China, Hong Kong, and the Philippines) data sets are presented in Section 3.

2.2.2 | Academic engagement in math

The items in the emotional (*n* = 4) and social (*n* = 4) subscales in the short version (Datu et al., 2021b) of math academic engagement (Wang et al., 2016) were used to assess such dimensions of student engagement. Sample items include: "I enjoy learning new things about math" and "I try to understand other people's ideas in math class." Items were rated on a 5-point scale ranging from 1 = "*strongly disagree*" to 5 = "*strongly agree.*" The Cronbach's alpha coefficients of the emotional and social engagement subscales in this study were .85 and .67. Note that while

the Cantonese and Mandarin versions of the SKS and math engagement subscales were used among students in Hong Kong and mainland China, their Filipino versions were used among students in the Philippines.

2.2.3 | Perceived academic performance

Students were asked to rate their current overall academic performance using a scale of 0–100, with lower values indicating poor academic performance and higher values indicating excellent academic performance. Single-item instruments have been found to be valid in measuring globally understood constructs such as students' subjective academic performance and socioeconomic status (Leung & Xu, 2013).

2.3 | Procedures

Approval from the human research ethics committee of the authors' university was sought before gathering data. Invitation letters were sent to principals and school heads of participating schools. With their approval, personal assent and parental consent were sought from the student participants as well as their parents or legal guardians. Research assistants with the help of the students' classroom advisers administered a paper-and-pen survey to the participants. On average, students managed to answer the survey within 15 min. The current study is part of a larger research project which aims to explore the predictors of academic and mental health outcomes among secondary school students in mainland China, Hong Kong, and the Philippines.

2.4 | Data analysis

Descriptive statistics (i.e., means, standard deviations, skewness, and kurtoses) and reliability coefficients (i.e., Cronbach's alpha and McDonald's Omega) were computed using the 27th version of the Statistical Package for the Social Sciences (SPSS). Confirmatory factor analysis (CFA) using lavaan package (Rosseel, 2012) in R (R Core Team, 2019) with robust maximum likelihood estimation, robust standard errors, and a Satorra-Bentler scaled chi-square test statistic (SB $\chi2$) was conducted to determine the adequacy of the unidimensional model of school kindness. Separate CFAs were conducted for the combined data set and individual data sets from Mainland China, Hong Kong, and the Philippines. In evaluating the models' goodness-of-fit, we relied on the values of the Comparative Fit Index (CFI), Tucker–Lewis Index (TLI), Root Mean Square Error of Approximation (RMSEA), and Standardized Root Mean Square Residual (SRMR). Specifically, models with CFI and TLI values above .90 (Hu & Bentler, 1995) as well as SRMR and RMSEA values below .08 (Hu & Bentler, 1999) were indicative of good fit to the data.

Multigroup CFAs using lavaan package (Rosseel, 2012) in R (R Core Team, 2019) were also performed to determine the configural (i.e., based on factor structure), metric (i.e., based on factor loadings), scalar (i.e., based on item intercepts), and strict invariance (i.e., based on item residuals) of the unidimensional model of school kindness across setting (i.e., Mainland China, Hong Kong, and the Philippines), gender (i.e., male and female), and year level (i.e., Years 1, 2, 3, and 4). Measurement invariance was examined using the following threshold changes: CFI < 0.010, SRMR < 0.030 (for configural invariance), SRMR < 0.010 (for metric, scalar, and strict invariance), and RMSEA < 0.015 (Chen, 2007). Measurement invariance was inferred if there were no significant changes in these values. Finally, Pearson's r correlation analysis was conducted with school kindness, PAP, and selected math engagement dimensions using the 27th version of the SPSS was used to generate evidence regarding the criterion-related validity of the SKS.

3 | RESULTS

3.1 | Descriptive statistics

The descriptive statistics of the SKS' items, overall school kindness using the entire data set and the separate data sets from mainland China, Hong Kong, and the Philippines are presented in Tables 1–4, respectively. Skewness and kurtosis values from all data sets show that school kindness is within the range of normality (i.e., ±3; Brown, 2006). The Cronbach's alpha and McDonald's omega were also calculated to generate estimates of the SKS' reliability coefficients. Results show that school kindness has an acceptable internal consistency among the entire sample ($\alpha = .85$; $\omega = .85$) and subsamples from mainland China ($\alpha = .86$; $\omega = .87$), Hong Kong ($\alpha = .87$; $\omega = .87$), and the Philippines ($\alpha = .78$; $\omega = .79$).

3.2 | Confirmatory factor analysis

As shown in Table 2, results of the CFAs using the combined and individual data sets from mainland China, Hong Kong, and the Philippines generated poor fit. A review of the modification indices (MI = 348.13) suggested the need to add an error covariance between the second (i.e., "Kindness happens regularly in my classroom") and third (i.e., "Kindness happens regularly in my school") items of the SKS. This error covariance was probably due to the similarity in the nature of both items that tap participants' perceptions of the frequency of kindness in school settings. Also, both items are similarly worded and arranged consecutively in the survey. Correlating the error terms of items 2 and 3 resulted in acceptable fit for the combined and individual data set from mainland China, Hong Kong, and the Philippines, although the absolute RMSEA values of the combined (0.097) and Hong Kong (0.115) models are slightly above the suggested values of Hu and Bentler (1995).

3.3 | Measurement invariance

As shown in Table 3, the unidimensional model of school kindness exhibited configural invariance across setting and year level. This means that the unidimensional factor structure of SKS is comparable among students from different contexts (i.e., Hong Kong, mainland China, and the Philippines) and year levels. This measurement model exhibited configural, metric (i.e., consistency factor loadings), scalar (i.e., consistency in intercepts), and strict (i.e., consistency in residuals) invariance across gender, indicating that the unidimensional model of this construct had comparable meaning across boys and girls.

3.4 | Criterion-related validity

The associations of school kindness with PAP and math engagement dimensions were also examined for the entire data set and separate data sets using Pearson's correlational analyses. Results showed that whereas school kindness was positively correlated with PAP in Hong Kong and mainland China, these constructs were not significantly linked to each other in the Philippines. School kindness was positively correlated with emotional and social engagement in math in all contexts. Table 4 reports the descriptive statistics and zero-order correlational coefficients between school kindness and criterion variables.

TABLE 1 Descriptive statistics of the SKS' items in the overall sample and sub-samples

Overall sample	N	Min.	Max.	M	SD	Skewness	Kurtosis
1. The adults in my school model kindness.	1692	1	5	3.79	1.083	−0.601	−0.250
2. Kindness happens regularly in my classroom.	1692	1	5	3.78	1.013	−0.581	−0.087
3. Kindness happens regularly in my school.	1692	1	5	3.91	0.956	−0.736	0.356
4. My teacher is kind.	1692	1	5	4.19	0.946	−1.181	1.167
5. At my school, I am encouraged to be kind.	1692	1	5	4.37	0.799	−1.163	1.075
Overall school kindness	1692	1	5	4.01	0.758	−0.562	0.207
Cronbach's α	.846						
McDonald's ω	.848						
Mainland China sub-sample	N	Min.	Max.	M	SD	Skewness	Kurtosis
1. The adults in my school model kindness.	804	1	5	3.58	1.111	−0.471	−0.353
2. Kindness happens regularly in my classroom.	804	1	5	3.79	1.019	−0.661	0.018
3. Kindness happens regularly in my school.	804	1	5	3.98	0.922	−0.871	0.832
4. My teacher is kind.	804	1	5	4.01	1.023	−1.050	0.811
5. At my school, I am encouraged to be kind.	804	1	5	4.40	0.727	−1.200	1.820
Overall school kindness	804	1	5	3.953	0.780	−0.567	0.593
Cronbach's α	.864						
McDonald's ω	.873						
Hong Kong sub-sample	N	Min.	Max.	M	SD	Skewness	Kurtosis
1. The adults in my school model kindness.	342	1	5	3.69	1.055	−0.418	−0.389
2. Kindness happens regularly in my classroom.	342	1	5	3.53	1.018	−0.063	−0.567
3. Kindness happens regularly in my school.	342	1	5	3.65	1.019	−0.251	−0.508
4. My teacher is kind.	342	1	5	4.04	0.936	−0.594	−0.372
5. At my school, I am encouraged to be kind.	342	2	5	4.11	0.903	−0.438	−1.147
Overall school kindness	342	1.40	5.00	3.802	0.799	−0.091	−0.804
Cronbach's α	.868						
McDonald's ω	.869						
Philippines sub-sample	N	Min.	Max.	M	SD	Skewness	Kurtosis
1. The adults in my school model kindness.	546	1	5	4.15	0.959	−0.938	0.352
2. Kindness happens regularly in my classroom.	546	1	5	3.90	0.977	−0.825	0.551
3. Kindness happens regularly in my school.	546	1	5	3.96	0.940	−0.886	0.780
4. My teacher is kind.	546	1	5	4.56	0.696	−1.810	4.013
5. At my school, I am encouraged to be kind.	546	1	5	4.48	0.797	−1.679	2.988
Overall school kindness	546	1.20	5.00	4.212	0.644	−0.776	0.578
Cronbach's α	.783						
McDonald's ω	.791						

TABLE 2 Results of the confirmatory factor analyses of the SKS

	SB χ^2 (df)	p	CFI	TLI	RMSEA	90% CI	SRMR	AIC	BIC
Original Combined Model (n = 1692)	183.687 (5)	<.001	0.899	0.798	0.208	0.183–0.235	0.055	19,974.074	20,055.579
Modified Combined Model (n = 1692)	43.484 (4)	<.001	0.983	0.956	0.097	0.072–0.124	0.023	19,668.128	19,755.067
Original mainland China Model (n = 804)	54.846 (5)	<.001	0.949	0.899	0.157	0.121–0.196	0.037	9159.286	9229.630
Modified mainland China Model (n = 804)	8.231 (4)	.083	0.996	0.990	0.050	0.000–0.098	0.015	9067.883	9142.917
Original Hong Kong Model (n = 342)	60.624 (5)	<.001	0.856	0.712	0.274	0.215–0.338	0.064	4059.894	4117.416
Modified Hong Kong Model (n = 342)	14.679 (4)	.005	0.980	0.949	0.115	0.056–0.181	0.027	3946.414	4007.771
Original Philippines Model (n = 546)	67.325 (4)	<.001	0.881	0.762	0.186	0.148–0.227	0.064	6284.209	6348.748
Modified Philippines Model (n = 546)	8.818 (4)	.066	0.993	0.983	0.050	0.000–0.095	0.021	6194.180	6263.022

Abbreviations: AIC, Akaike information criterion; BIC, Bayesian information criterion; CFI, comparative fit index; df, degrees of freedom; RMSEA, root mean square error of approximation; SB χ^2, Satorra–Bentler scaled chi-square test statistic; SKS, School Kindness Scale; SRMR, standardized root mean square residual; TLI, Tucker–Lewis Index; 90% CI, 90% confidence interval.

TABLE 3　Multigroup confirmatory factor analyses on the unidimensional model of the SKS across setting, gender, and year level

Model	SB χ^2 (df)	CFI	RMSEA	SRMR	ΔCFI	ΔRMSEA	ΔSRMR	Invariant?
Overall Model	43.484 (4)	0.983	0.097	0.023	–	–	–	–
Across setting								
Configural Model	32.088 (12)	0.991	0.068	0.019	–	–	–	Yes
Metric Model	112.121 (20)	0.964	0.108	0.074	−0.027	0.040	0.055	No
Scalar Model	285.453 (28)	0.913	0.142	0.095	−0.051	0.034	0.021	No
Strict Model	299.281 (38)	0.897	0.132	0.114	−0.016	−0.010	0.019	No
Across gender								
Configural Model	44.320 (8)	0.984	0.094	0.022	–	–	–	Yes
Metric Model	55.225 (12)	0.982	0.081	0.033	−0.002	−0.013	0.011	Yes
Scalar Model	69.134 (16)	0.979	0.074	0.035	−0.003	−0.007	0.002	Yes
Strict Model	66.975 (21)	0.979	0.065	0.037	0.000	−0.009	0.002	Yes
Across year level								
Configural Model	41.460 (16)	0.989	0.076	0.022	–	–	–	Yes
Metric Model	93.632 (28)	0.974	0.090	0.056	−0.015	0.014	0.034	No
Scalar Model	209.567 (40)	0.941	0.112	0.073	−0.033	0.022	0.017	No
Strict Model	206.568 (55)	0.933	0.103	0.090	−0.008	−0.009	0.017	No

Abbreviations: CFI, comparative fit index; *df*, degrees of freedom; RMSEA, root mean square error of approximation; SB χ2, Satorra–Bentler scaled chi-square test statistic; SKS, School Kindness Scale; SRMR, standardized root mean square residual; ΔCFI, CFI change; ΔRMSEA, RMSEA change; ΔSRMR, SRMR change.

TABLE 4　Descriptive statistics and correlational coefficients among School Kindness Scale (SKS), perceived academic performance (PAP), math emotional engagement (MEE), and math social engagement (MSE) in Hong Kong, mainland China, and the Philippines

| | Mean and standard deviation | | | | | | Correlations | | | | | | | |
| | Hong Kong(n = 342) | | Mainland China(n = 804) | | Philippines (n = 546) | | Hong Kong (upper)Mainland China (lower) | | | | Philippines | | | |
	M	SD	M	SD	M	SD	1	2	3	4	1	2	3	4
1. SKS	3.80	0.80	3.95	0.78	4.21	0.90	–	.21***	.36***	.34***	–			
2. PAP	56.55	19.79	65.25	20.12	89.19	6.98	.15***	–	.35***	.31***	.03	–		
3. MEE	3.30	0.73	3.62	0.64	3.91	0.57	.50***	.19***	–	.79***	.26***	.08*	–	
4. MSE	3.30	0.65	3.52	0.66	4.02	0.56	.47***	.16***	.71***	–	.27***	.13**	.74**	–

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

4 | DISCUSSION

Studies have shown that the SKS had acceptable psychometric properties among primary and middle school students in Canada (Binfet et al., 2016), middle school students in Turkey (Yurdabakan & Uz Baş, 2019), and high school students in the Philippines (Datu & Park, 2019; Datu et al., 2022). However, little is known regarding its

measurement invariance in different cultural contexts. This study investigates the invariance of the SKS across contexts, gender, and year level among high school students across Hong Kong, mainland China, and the Philippines.

This study shows that the modified unidimensional model of school kindness constructs with correlated error variance in items 2 and 3 (i.e., "Kindness happens regularly in my classroom" and "Kindness happens regularly in my school") had better fit than the original measurement model, which confirms prior research findings (Datu et al., 2022; Yurdabakan & Uz Baş, 2019). A plausible reason that accounts for this finding is the overlapping nature of both items, which focused on assessing students' perceptions of kind acts in either classroom or school contexts. However, this investigation demonstrates the scale's limited invariance (i.e., configural invariance) across students in Hong Kong, mainland China, and the Philippines. Similarly, there was partial invariance across year level, which suggests that the number of factors and pattern of loadings are comparable among students from diverse year levels. Given that these findings proffer limited evidence regarding the generalizability of the school kindness construct across contexts and year levels, caution should be observed in carrying out mean-level comparisons among students with diverse cultural and developmental backgrounds.

Corroborating previous research (Yurdabakan & Uz Baş, 2019), this study reveals that the modified unidimensional model of school kindness had full invariance across gender. This result suggests that school kindness had comparable factor structure, factor loadings, item intercepts, and error covariances across boys and girls. Hence, the SKS can be used to explore gender differences in school kindness among high school students in selected non-Western contexts (i.e., mainland China, Hong Kong, and the Philippines). This study extends existing literature through recruiting early adolescent samples from multiple societies to offer evidence regarding the generalizability of the SKS in students with diverse gender profiles.

School kindness was associated with PAP in Hong Kong and mainland China and higher math engagement across Filipino, Hong Kong Chinese, and mainland Chinese adolescent samples. It is not surprising that school kindness was linked to higher emotional engagement as past research shows that school kindness was associated with higher overall engagement in middle (Yurdabakan & Uz Baş, 2019) and high school students (Datu & Park, 2019). In the same way, it is likely that school kindness was linked to higher likelihood of interacting actively with peers and teachers to learn math, given that past investigations have revealed that school kindness was linked to positive interpersonal constructs such as peer acceptance (Binfet et al., 2016), school belongingness (Lee & Huang, 2021), and satisfaction with interpersonal relations with family, school, and friends (Yurdabakan & Uz Baş, 2019). Given the positive associations of school kindness with adaptive academic outcomes, teachers, school psychologists, and counselors may use design psychoeducational interventions and programs (e.g., Pressman et al., 2015) that reinforce kind practices in children, adolescents, teachers, and nonteaching staffs.

Nonetheless, this study should be evaluated in light with its shortcomings. Given its correlational nature, it is impossible to draw causal conclusions between school kindness and academic outcomes. Future research can test the hypothesized associations of school kindness with PAP and math engagement via a cross-temporal design. The results of this study are also limited to a convenience sample of secondary school students from Hong Kong, mainland China, and the Philippines. Future investigations may include students from other collectivistic settings to further examine the cross-cultural applicability of the SKS. The use of self-reported measures of school-kindness and criterion-related variables may also inflate the likelihood of social desirability biases. Future research can address this limitation through using alternative approaches in assessing school kindness (e.g., peer-report measure of school kindness). As the focus of this study was generating insights regarding the criterion-related validity of the SKS, it is not possible to understand how school kindness can predict unique and additional variance in academic and social-emotional learning outcomes above and beyond the effects of theoretically related constructs such as extraversion, agreeableness, and encouragement. Hence, future investigations are necessary to provide evidence on the incremental validity of the school kindness construct.

This study contributes to existing school kindness literature in multiple ways. First, unlike prior studies (Binfet et al., 2016; Yurdabakan & Uz Baş, 2019) which relied on monocultural samples, this study recruited a sample of

adolescents in Hong Kong, mainland China, and the Philippines to investigate the psychometric properties of the SKS. Second, it extends findings (Yurdabakan & Uz Baş, 2019) on the construct comparability of school kindness through demonstrating the configural invariance of the modified unidimensional model of school kindness across settings and year levels. Given the limited evidence of measurement invariance across settings, future researchers are recommended to modify the SKS and evaluate its cross-cultural generalizability in multiple contexts. Third, whereas past investigations have shown the links of school kindness to academic self-efficacy (Binfet et al., 2016) and overall academic engagement (Datu & Park, 2019), this study demonstrates the associations of school kindness with higher levels of emotional and social engagement in math as well as PAP. Through examining the associations of school kindness with engagement in a specific subject area across Filipino and Chinese adolescents, this study proffers unique contribution to the existing literature about the criterion-related validity of the SKS. We hope that our study can stimulate more investigations regarding the cross-cultural generalizability of school kindness in adolescents from diverse sociocultural contexts.

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DATA AVAILABILITY STATEMENT

The data that support the findings of this study are available from the corresponding author upon reasonable request.

ETHICS STATEMENT

All procedures performed in studies involving human participants were in accordance with the ethical standards of the institutional and/or national research committee and with the 1964 Helsinki declaration and its later amendments or comparable ethical standards. Informed consent was obtained from all individual participants included in the study.

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SUPPORTING INFORMATION

Additional supporting information can be found online in the Supporting Information section at the end of this article.

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