



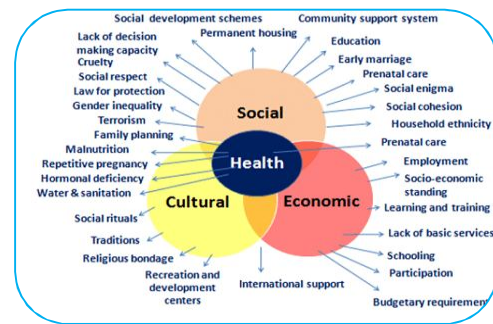
GENDER BASED SOCIAL SKILLS AND ACADEMIC DEVELOPMENT DURING MIDDLE ADULTHOOD

Soyuze George

PhD Scholar, Arunodayam University, Arunachal Pradesh.

ABSTRACT:

This study examined the development of social skills across five measurement points from 4th to 7th standard of the school, and the influence of child gender and school-related factors on the level and growth of social skills, in a large sample of normally developing children in Kerala (N = 200). On average, children's social skills scores increased slightly, girls received higher scores than boys, and individual order stability was fairly high over time. Growth mixture modeling (GMM) identified three distinct trajectory classes, one with stable average scores over time (72%), and two (14% each) with high initial and declining scores and low initial and increasing scores, respectively. The school-related factors (e.g., student-teacher relationships) predicted social skills development differently within the trajectory classes.



KEYWORDS: Primary school, growth mixture modeling, longitudinal, social skills.

INTRODUCTION

Social skills are *life skills* (UNICEF) and therefore crucial for children to acquire. Children who cooperate and share with others, who are helpful and empathic, and who are able to regulate emotions in adaptive ways, are generally better off on most social arenas in life, including at school. Social skills are observable indicators of the larger social competence construct. Social competence is a multidimensional construct, which refers to the ability to integrate cognition, affect, motivation, and behavior in order to succeed with social tasks and to achieve positive developmental outcomes. Most definitions converge that social competence encompasses several related inter- and intrapersonal skills that can be organized into overt sub-dimensions, such as cooperation, assertion, self-control, empathy, and . Social skills are learned and affected by the characteristics of the context in which they develop. In this study, we examined the degree to which school-related factors influenced the initial level and growth of social skills in primary school children, namely, student-student relationship, teacher-student relationship, level of problem behavior in class and teachers' collective efficacy.

Social skills are important in their own right but have also been found to relate to other important domains of development, such as mental health and academic achievement. Socially skilled children often have more positive attitudes toward school, adjust more smoothly to the student role, and have better classes than their less socially skilled peers. Low social competence has been

associated with an array of unfavorable outcomes, such as externalizing behavior, delinquency, depression, social anxiety, academic failure, and unemployment.

The acquisition of social skills is an essential developmental process by which children from infancy learn to act and respond appropriately in social interactions and to form and maintain healthy relationships with others. As children grow and gradually expand their social environment, school becomes an important arena where children both learn and exercise social skills. At school, children's social skills are challenged and shaped in a variety of ways, both in dyads, small and large groups, and during interactions with peers and with teachers. Despite evidenced relations to critical child outcomes, and in contrast to academic skills, social skills are seldom systematically promoted in schools. For schools and teachers to be successful in supporting their students, knowledge of how social skills develop and how school may influence students' social development is essential. In this study, we examined the development of social skills in a large sample of children from 4th through 7th class, and investigated whether a set of school-related factors affected children's different growth trajectories.

SOCIAL SKILLS DEVELOPMENT

According to the bioecological model, proximal processes (i.e., interactions between individuals in the micro system such as family, school, and peers) are the primary engines of human social development. Viewed from a transactional perspective, there is a bidirectional interchange between children and their social contexts, in which both children themselves and the environment develop and change from the ongoing interactions. These transactional processes may positively or negatively reinforce children's social skills development, depending on the contribution from the children themselves and the environment. In order to foster children's development of social skills, the proximal processes should be predominately positive, consistent, and supportive, and occur on a regular basis over time.

From theory, it can be expected that social skills gradually evolve through childhood and adolescence (Bandura, Beauchamp & Anderson). In middle childhood (6 to 12 years), establishing and maintaining close friendships with peers are critical developmental tasks, as are learning and adapting adequately to the rules of school and society. Afforded at home through modeling, reinforcement, and imitation but also on school-related factors such as relationships with peers and. Hence, it is reasonable to expect that children's social skills, in general, will be refined with practice, from social interactions and reactions from the environment in various situations. Given these assumptions, one may expect that children with high scores on social skills measures at one time point will continue to score high on later measurement points (showing individual order stability), and that children on average would show increases in social skills during the primary school years (showing a mean-level increase), rather than continuity.

Despite the rich theoretical basis for advances in children's social skills from toddlerhood to adolescence, the empirical evidence of such growth is inconsistent. A review of relevant literature revealed nine longitudinal studies published since the turn of the century in which children's social skills development across middle childhood was reported. As can be seen from study characteristics and key results depicted in Table 1, results are diverging, and may stem partly from discrepancies in methods, which makes it difficult to draw conclusions from the literature.

Study characteristics and key results from longitudinal studies of social skills development in children across middle childhood

Nevertheless, our review indicates that results from prior studies using well-validated and multidimensional measures of social skills (e.g., SSRS) report an increase during middle childhood, while results from studies using one-dimensional measures (e.g., helpfulness) or different measurements at different waves, yield stable or decreasing social skills scores. In the current study, we used SSRS (Gresham & Elliott) to measure children's social skills across five time points from 4th class through 7th class.

DIFFERENT DEVELOPMENTAL TRAJECTORIES

When studying the development of children's social skills, it is important to note that children vary with regard to individual characteristics (e.g., temperament, gender, cognitive abilities) and are differentially susceptible to environment characteristics including the school context. Some children may be more sensitive and responsive to environmental experiences than others, and some may be more easily influenced by peers than by teachers. Moreover, environments may vary with regard to how facilitative they are to such individual differences. Children hold different experiences from social interactions with parents, siblings, and others, which will influence how they interact with teachers and peers. The degree of parental support, encouragement, and guidance may explain some of the variation in school-aged children's social skills. Children with well-developed social skills may more readily enter into positive relationships with teachers and peers, which in turn reinforce their social skills. Conversely, children who act inappropriately or awkwardly toward others may more often experience confrontation or rejection and thus miss out on positive interpersonal experiences. From this, one might expect the initially more socially skilled children will advance their skills the most. On the other hand, children whose initial social skills are inadequately developed may have more room to grow and if they are provided with facilitating opportunities to interact with peers and teachers, these children may, in fact, exhibit greater growth.

Taken together, individual and contextual variability may through ongoing transactional processes contribute to differences in children's social skills development. It is reasonable to expect that groups of children may follow heterogeneous social skills trajectories and that these trajectories may be predicted by individual and contextual factors in different ways. From the bioecological perspective, it also derives that a longitudinal person-context approach is warranted when studying the development of children's social skills.

a low trajectory group included children with the lowest helpfulness scores and was stable across ages, 2) a moderate trajectory group included most children (54.4% of boys, 58.2% of girls) and had a curvilinear slope in which helpfulness first increased and then slightly decreased from age nine, and 3) a high trajectory group comprised of children with the highest helpfulness scores which was stable across ages. More of the boys (43.8%) than of the girls (15.2%) were in the low trajectory group, while the reverse was true for the high trajectory group (1.8% of boys, 26.7% of girls, identified four trajectory groups from teacher-ratings of Italian children's social skills (age 10 to 14) using the Prosocial Behavior Scale (low-stable 8%, moderate-declining 48%, high-declining 37%, and increasing 7%). It is found, based on teacher-ratings of social skills (SRS), two distinct trajectories for both girls and boys (kindergarten through class 5): a higher-level trajectory with a marginally significant curvilinear shape and a stable moderate-level trajectory. The high trajectory group included most children (about 70%).

Results from these and other longitudinal studies indicate that the broad patterns of social skills development are similar for boys and girls. For example, in their longitudinal study of at-risk children, found that social skills development appeared gender invariant, in terms of both structure and stability, from early childhood to middle adolescence. There is, however, the extensive evidence of gender differences in children's *level* of social skills. Boys frequently receive significantly lower mean scores than girls, apparently regardless of the informant (teacher, parent, self, peers), age, and cultural context.

In summary, results from prior research on the development of social skills during middle childhood are mixed. Nevertheless, findings support theory in that there are likely separate groups of children who follow different developmental trajectories. The number of trajectory groups that has been found to vary across studies (most often 2–4). The diverging findings warrant further research, including additional exploration of mean level continuity and individual order consistency in social skills across middle childhood. Further research on the heterogeneity in children's social skills development is important from a preventive perspective (e.g., to make possible early identification of

children at risk of social skills deficits, to guide the development and implementation of effective interventions to prevent social exclusion, to substantiate the need for a social skills curriculum in school). In light of the many negative impacts low social competence may have on children's functioning, early identification of students at risk of an unfortunate social skills development is important. Likewise, knowledge on how teacher's best can support children on various social skills trajectories would be of practical significance. By reporting on the development of social skills in a large sample of typically developing children in Kerala, the present longitudinal study aims to add to the existing knowledge base.

School-related factors that may influence the development of social skills

Because children's social functioning and development of social skills are affected by the context in which they develop, exploring the influence of factors related to the school context is essential. Prior research indicates that it is the *modifiable* aspects of the school context (e.g., student-teacher relationships, the policy and practice of the teachers as a group, extent of classroom disruption) rather than structural aspects (e.g., size, location, portion of males versus females) that affect students' academic and behavioral outcome.

School-related factors, such as the psychosocial classroom environment may have differential effects on children's social skills trajectories. Classrooms characterized by positive relationships between fellow students likely create contexts more conducive to positive skills development; found that children in preschool classrooms with more positive and cooperative interactions between peers showed greater gains in positive social behavior in 1st class. While positive peer relationships in the classroom likely are generally beneficial, they may nevertheless be more important to certain subgroups of children than to others. For example, positive classmate relationships may be of greater importance to children who show a declining social skills trajectory than to those who show an increasing or stable trajectory.

Furthermore, the level of classroom problem behavior likely also affects children's skills development differently. Found an interaction effect between disruptive classrooms and boys' aggression; the effects of disruptive classrooms were greater for boys who were more aggressive, compared to both the typical boy and aggressive boys who were placed in less disruptive classrooms. No similar classroom effect was found for girls. It may be that children on a stable social skills trajectory are less susceptible to classrooms marked by frequent problem behavior or schools where the teachers experience low collective efficacy than students on a less common trajectory. Thus, to the extent that children's social skills development follow different trajectories, it is likely that certain school-related predictors affect typical (majority growth curve) and atypical trajectories (growth curves with fewer students) differently.

Research concerned with school-related factors that may affect the development of social skills has been meager, especially during middle childhood. To be able to more effectively support *all* students' social development, teachers need explicit knowledge on how various school-related factors may influence the student's social skills. In this study, we explored whether and how student-student and student-teacher relationships, problem behavior in class and teachers' collective efficacy affected the students' social skills in 4th class through 7th class.

Student-teacher relationships

Evidence suggests that healthy student-teacher relationships predict children's later level of social skills. Children who experience close and conducive student-teacher relationships are likely to be more socially adaptive than classmates with less positive relationships with their teachers. Conversely, student-teacher relationships marked by dependency and conflict are associated with negative outcomes, such as poor academic performance, emotional insecurity, problem behavior, and negative school.

Traditionally, studies investigating student-teacher relationships have relied primarily on teacher reports, although recent research has drawn attention to students' own assessments of their relationships with their teachers. This raises some important issues. First, agreement between teacher-reports and student-reports is generally low, which may indicate differences in perception or an emphasis on different aspects of the relationship between students and teachers. For example, students may rate their relationship with their teacher high on closeness, whereas the teacher may view the same relationship as overly dependent on the part of the student. Second, the predictive value of student-teacher relationship likely also depends on the rater. Found no correlation between student-rated closeness and teacher-rated prosodies behavior in their study of Dutch 4th to 6th classers. Finally, the student-teacher relationship may have differential effects on students' behavior depending on student characteristics. For example. Found that teacher-student relationships were both closer and more conflictual among extroverted students. From theory and prior research, it follows that the quality of relationships between students and teachers is a highly relevant school-related factor with significant, but varying influence on students' social functioning. In the current study, we investigated whether student-rated student-teacher relationship quality predicted differential social skills trajectories.

Student-student relationships

From an early age, positive peer relationships and successful play interactions are associated with favorable social, behavioral and academic development, and adjustment. Conversely, conflictual peer interactions are associated with negative behavioral and emotional outcomes, including difficulties with school adjustment. Despite the extensive literature on the importance and influence of young students' social relationships on their social functioning and academic achievements, surprisingly little is known about the predictive value of student-student relationships and whether they affect the growth of social skills over time. In the current study, we investigated whether student-rated student-student relationship quality predicted differential social skills trajectories.

Problem behavior in class

Safe and constructive classroom environments with a lower prevalence of problem behavior make it easier to both teach and reinforce positive skills for teachers and to exhibit and practice them for students. Classrooms with higher levels of disruption may, on the other hand, form a more challenging context in which students can exercise a wide specter of social skills (negotiation, assertion, cooperation, self-control, etc.). It is, however, not clear how a classroom level variable such as the amount of problem behavior affects the growth of an individual level variable such as social skills. In this study, we investigated the association between the prevalence of classroom problem behavior and children's level and growth in social skills as this has not been empirically investigated before.

Collective efficacy in school

Collective efficacy refers to the teachers' shared beliefs about their combined capability to organize and execute courses of actions required to produce student success. It is argue that the teachers' mutual beliefs of efficacy will shape the normative culture of a school and subsequently has modulating effects on the teachers' behaviors, and that this, in turn, affects student performance. Previous studies have demonstrated a positive association between teachers' collective efficacy and students' academic achievement. Moreover, a strong inverse and reciprocal relation between teachers' collective efficacy and student problem behavior has been established. From social cognitive theory and prior research, one might expect that teachers' collective efficacy also influences students' social skills. However, due to a lack of research, we do not know. Thus, in the current study, we tested whether teacher collective efficacy is a predictor of children's social skills development.

In sum, few studies have investigated the predictive effects of school-related characteristics and students' social skills. The present study contributes to new knowledge by including the aforementioned school-related factors as potential predictors of children's level and growth of social skills during the latter part of primary school. Building on theory and prior studies, we hypothesized that student-teacher and student-student relationships, problem behavior in the classroom and perceived collective efficacy in school predict students' social skills development over time, although we also expect that they will have different effects for children on various developmental trajectories.

Research questions

Based on repeated teacher assessments of social skills in 200 typically developing children in Kerala and using a growth mixture model approach (GMM), we asked the following research questions: Q1. Is there mean-level and rank-order stability in children's social skills scores from class 4 through class 7; that is, is the average social skills score for the children as a group stable across time, and do the children maintain their relative position within the group across time?

Q2. Do children's social skills follow the same overall developmental trajectory across time points, or will separate trajectory classes be meaningfully identified?

Q3. Do child gender and school-related factors (student-student relationship, student-teacher relationship, problem behavior in class, collective efficacy) predict intercept and slope?

Q4. Do the school-related predictors have differential effects on children's social skills in potentially different trajectory classes?

Method

Data were drawn from a multi-cohort effectiveness study in which students (Classes 4–7) and school staff in 4 primary schools across Kerala completed questionnaires at six measurement points (T1-T6) across five successive school years. T1 assessments were collected in the spring of 3rd primary (2007), T2 assessments in the fall of 4th primary and the remaining assessments were collected each spring in 4th, 5th, 6th and 7th primary. To be able to follow the same group of students over a longer time period, the current analyses concentrate on the 4th primary's of the original sample (N=200) who were followed through 7th primary (age 12 years). The schools were implementing various programs to prevent student problem behavior or to improve the learning conditions and were randomly invited to participate as intervention or comparison schools. Those who volunteered were selected according to predefined exclusion and inclusion criteria (detailed description of the design). The aim of the current study was, however, not to examine intervention effects.

Head teachers rated the students' individual social skills at five time points (T2-T6, not at T1). Head teachers have the primary responsibility for the students and are typically the most knowledgeable about the students. Some students had a different teacher rating their social skills from 4th to 7th primary. Problem behavior in class and collective efficacy were rated by school staff 6 months prior (T1) to the first assessment of social skills. Student-rated student-student and student-teacher relationships were assessed parallel to the first assessment of social skills (T2). The standards of the Regional Committee for Medical and Health Research Ethics followed to the conduct of the study.

Participants and procedures

About 50% of the students were girls and 6.4% had rural background (i.e., students and/or parents migrated from rural area of the state of Kerala). Moreover, 3.9% had been referred to the school educational services and 1.5% had been referred to child welfare or mental health services during the baseline year. Also, 4.9% received ongoing special education. In Kerala, special education is a statutory right for students who for various reasons have problems following the regular classroom instruction. Reasons typically include learning difficulties, developmental disabilities, behavioral problems, or visual or hearing impairments. Most teachers were females (80%), experienced had worked at least

10 years in schools). The mean school size was 500 students. Data on students' socio-economic status (SES) were not collected. However, the student sample was drawn from a diverse sample of Kerala schools located in areas with population SES varying from relatively low to high.

Questionnaires were completed during ordinary class sessions (1–2 h). To standardize the assessment procedures, written instructions were given. Informed and written consent from parents was obtained beforehand. All parents received an informative consent letter (e-mail) in Kerala in Malayalam. The consent was signed and returned via the school. The consent letter included key information on the research study, privacy, and safe handling of information. The school staff agreed coincident with completing the questionnaires.

Measures

Social skills

The teacher version (primary level) of the Social Skills Rating System (SSRS; Gresham & Elliott) was used to assess the students' social skills (the later version, SSIS, the Social Skills Improvement System, was not available by the initiation of the study). This well-validated measure has been used with diverse samples, and studies have reported it to be a reliable, gender-invariant and valid measure, also in Kerala. Head teachers rated how often the students engaged in positive social behaviors described in 30 items on a 4-point (originally 3-point) scale (1 = *never* to 4 = *almost all the time*). The scale taps three underlying sub-dimensions: assertion (e.g., "The student initiates conversations with peers"), self-control (e.g., "The student receives criticism well") and cooperation (e.g., "The student attends to the teacher's instructions"). The sum score was used in the analyses ($\alpha = .95$ at T2 – T6).

Student-teacher and student-student relationships

Students rated how they perceived the social relationships in class on the 22-item Classroom Climate Scale (CCS; Sørli & Nordahl). The CCS measures the psychosocial learning conditions in class and consists of two significant sub-scales that were included in the analyses; a student-teacher relationship scale (STR; 10 items) and a student-student relationship scale (SSR; 12 items). Items are assessed on a 4-point scale ranging from 1 (*does not fit*) to 4 (*fits completely*). Item examples are: "The students in this class are good friends" and "The teacher encourages me if I strive with a task." The CCS composite and sub-scales have shown satisfactory psychometric properties in prior studies in terms of reliability alphas and distributional qualities (e.g., Sørli & Nordahl). In the present study, the reliability alphas of the STR and SSR were $\alpha = .77$ and $.82$, respectively.

Problem behavior

Incidences of moderate and serious problem behaviors in the classroom context were measured by school staff on the 20-item scale Problem Behavior in the Classroom Last Week (Grey & Sime). School staff reported on how many times they had observed negative behavior incidents in the classroom during a random week at T1. Item examples are; "Running in corridors" and "Physical attacks on students." School staff included both head teachers, special education teachers, teacher assistants, and after-school personnel. Response choices ranged from 1 = *not observed* to 5 = *observed several times per day*. The scale has shown satisfactory psychometric properties and validity in prior Kerala studies.

Collective efficacy

Teachers' collective efficacy (TCE) was assessed by school staff on a 12-item revised version (Goddard) of the Collective Efficacy Scale (Goddard et al). The TCE assesses teachers' beliefs in their joint effort and competence in promoting student success. A recent validity analysis of the TCE supports its use (Hukkelberg & Sørli, [Citation in review](#)). Items were rated on a 5-point scale ranging

from 1 (*never*) to 5 (*very often*) with $\alpha = .82$ at T1. Item examples are; “Teachers here are confident they will be able to motivate their students” and “Teachers in this school are able to get through to difficult students.” Measures in English were independently translated and back-translated by two senior researchers at the Kerala Center Development of Child (CDC).

Attrition and missing data analyses

Two hundred children participated at one or more assessment points. hundred and sixty children (80%) participated at all assessment points. The main reasons for attrition were change of school, absence on assessment day, and that one school withdrew from the study prior to T2. All models were tested with the full sample and full information maximum likelihood (FIML) was used to estimate information for participants with missing data.

Compared to children who were retained at T6, children who were lost received significantly lower social skills scores at the first assessment (T2), were less likely to have Kerala as the first language, had teachers who scored lower on collective efficacy and higher on classroom problem behavior. There were no significant differences between children who were retained at T6 and those who were not in terms of gender proportion, scores on the assessment of student–student relations, student–teacher relations, or school size. Analyses comparing children who participated at all time-points to those who participated at four or fewer time-points showed that children with partial data were less likely to have Kerala as first language (9.4% versus 5.5%).

Analytic plan

To examine the longitudinal data for students’ social skills from 4th through 7th primary, measured at five points, a series of mixture models were tested, as recommended by Jung and Wickrama . Mixture models refer to a type of analyses in which group membership of individuals is not known but is rather probabilistically inferred and represented by categorical latent variables, known as trajectory classes. We built our models in the following steps: First, an unconditional single-class growth curve model was tested. At this step, we tested both linear and quadratic effects. Second, we specified latent class growth analysis (LCGA) models comparing one, two and more class solutions, where within-class variance was fixed to zero as an initial exploratory test. Determination of the best-fitting model (i.e., the number of classes) was based on assessments of BIC, SSA-BIC, entropy, parsimony, and theoretical considerations. Third, we tested a conditional LCGA model with the best-fitting model from step two, adding the hypothesized covariates. We then addressed model convergence issues by testing whether parameter estimates were replicated using the OPTSEED option in Mplus, which helps to rule out the possibility of ending up with local solutions. Fifth, we specified a conditional model in a growth mixture context (GMM), entering the covariates while also allowing for individual variation within latent trajectory classes to be freely estimated, represented by random effects. Finally, we tested whether the covariates had different effects on the intercept and slopes for the different classes, by comparing that model with a model in which the effects of the covariates were fixed to be equal across classes.

Results

Table 2 presents the means, standard deviations, and correlations between study variables. As can be inferred, the rank-order stability (inter-individual stability) of social skills across time for the child group as a whole, was relatively high at successive assessments, ranging from $r = .58$ to $r = .76$. With reference to the question of rank-order stability (Q1), this indicates that children generally maintain their position within the child-group from one time-point to the next. As can be expected, individual (rank) order stability was lower across the entire period, with $r = .39$ from T2 to T6. At every measurement point, teachers scored girls’ social skills significantly higher than they did boys.’ With reference to the question of mean-level stability (Q1), the results showed a slight increase in scores

over the five measurement points (mean scores from 85.19 in 4th primary to 88.80 in 7th primary), suggesting that, in general, children received somewhat higher social skills scores over time.

Step 1: unconditional single-class linear and quadratic growth curve models

The unconditional linear growth model for social skills fits the data reasonably well $\chi^2(6) = 11.46, p = .08$, RMSEA = .02 (90% confidence interval, CI, = 0.00– 0.04) and CFI = .99. Both the latent intercept factor ($\alpha = 84.50, t = 278.59, p < .01$) and latent slope factor ($\beta = 0.21, t = 7.84, p < .01$) were significantly different from 0, the latter indicating that the sample of students, on average, increased their social skills over time. Furthermore, the variances of both the intercept ($\sigma_i^2 = 137, t = 16.46, p < .01$) and slope ($\sigma_s^2 = .85, t = 11.62, p < .01$) were significant. With reference to the first part of the research question Q2 (“Do children’s social skills follow the same overall developmental trajectory across time points”), our results seem to indicate that there likely were subgroups of children following different trajectories. The intercept and slope factors correlated significantly $r = -0.34, p < .01$, indicating that the lower the students’ social skills scores at baseline, the greater their growth in social skills over time. We then tested the same model, but with the addition of a third random effect, a quadratic slope factor. The addition of the quadratic slope factor produced a less well-fitting model $\chi^2(2) = 6.46, p = .04$, RMSEA = .03 (90% confidence interval, CI, = 0.01– 0.06) and CFI = .99. A χ^2 difference test, comparing the linear and quadratic models, indicated that the linear model was preferable; the difference between the models was non-significant ($p < .05$, with 4 degrees of freedom), the linear model was simpler (parsimony), and achieved better χ^2 -value and fit indices.

Step 2: comparing unconditional latent class models

Next, we tested unconditional latent class models with two and more classes to determine the optimal number of classes. A latent class growth analysis model assumes no within-class variances of individuals. Models were compared based on log-likelihood values, BIC-, SSA-BIC-, AIC-values, and entropy. In general, the higher the entropy value, the better. Lower BIC-values and higher log-likelihood values are also indicative of better fitting models. None of these should be used alone as an index of fit, rather the combination of all fit-indices together with parsimony and theoretical considerations guided our model selection. Based on these indices, the model with three classes was considered the best-fitting model. The Vuong-Lo-Mendell-Rubin likelihood-ratio test (LMR-LRT) and the Bootstrapped likelihood-ratio test (BLRT) for the $k - 1$ classes versus k classes (3 classes) were both significant at the $p < .001$ level, suggesting that the 3-class solution provided better fit to the data than the 2-class solution. Results thus seemed to affirm the second part of the research question Q2 (“will separate trajectory classes be meaningfully identified?”).

Step 3: conditional latent class growth model

We then tested a 3-class (from step 2) conditional latent class model, entering the covariates: student-teacher relationship, student-student relationship, problem behavior in class, and teacher collective efficacy. Child gender was entered as a predictor of class membership. The model tested in this step was still in the latent class growth analysis framework, which fixes the within-class variances to zero. This model produced a sample division of 18% in class 1, 55% in class 2, and 27% in class 3. All trajectory classes showed relatively flat curves for social skills over time but were different in their respective levels. All covariates were significantly predictive of the intercept, in the expected direction, with the exception of problem behavior in class, which was non-significant. Child gender was the only significant predictor of the slope factor, suggesting that boys were more likely to show increases in social skills over time, compared to girls. Results from the analyses in this third step answered research question Q3 (“Do child gender and school-related factors predict growth factors?”).

Step 4: addressing model convergence issues

Prior to comparing LCGA and GMM models (GMM models were tested in a step-wise fashion by progressively letting the variances of the growth factors to be freely estimated), we addressed convergence issues. Although all the models tested thus far converged successfully, we checked for the possibility of local solutions. We re-ran the conditional latent class model described above using the OPTSEED option in Mplus. We used the two best log likelihood values from the output and re-ran the model with the respective seed values. If estimates are replicated in these two runs, the chances for ending up with local solutions are reduced. Results showed that class proportions remained the same and all estimates were replicated, suggesting that we did not end up with local solutions.

Results from GMM

A summary of the effects of the predictors on each of the trajectories' growth factors is presented in Table 4. Furthermore, Table 5 shows the class percentage and the estimated correlation between intercept and slope and explained variance of social skills within each class. The following presentation of results addresses research question Q4 ("Do the school-related predictors [and gender] have differential effects on children's social skills in [...] different trajectory classes?").

Discussion

The current study examined the development of teacher-rated social skills in a large sample of primary school children in Kerala and the potential influences of child gender and school-related factors on the level and change in social skills. There was a slight mean-level growth in social skill scores from 4th through 7th primary, and in general, children maintained their rank within the group from one time-point to the next. Three trajectory groups with distinct developmental pathways were identified, one with high initial and declining scores, one with low initial and increasing scores, and one with average initial and fairly stable social skill scores. The school-related factors tested in this study predicted children's level and development of social skills differently within the respective trajectory groups.

General growth during middle childhood

The observed general growth in social skills across middle childhood is consistent with most theoretical models positing that social skills gradually increase through childhood and adolescence (e.g., Bandura; Beauchamp & Anderson). The increase also corresponds with findings from two earlier studies in the USA (Berry & Connor; DiDonato). The empirical basis of growth in social skills from toddlerhood and onward derived from the relative few studies that do exist, is, however inconsistent. Indeed, the lion's share of prior studies have reported either a slight decrease or general stability from the beginning of middle childhood to early adulthood. Mixed findings may partly stem from differences in measures. Notably, few prior studies have used social skills measures that take into account the multidimensionality of the construct or have used well-established and validated measures. Mixed findings may also stem from sample differences; small sample sizes, single-sex samples and samples with different socio-economic backgrounds). Moreover, discrepancies may reflect variations in the raters' knowledge, observations, or relations to the child.

Social skills trajectories

Our longitudinal data suggest that there is heterogeneity among children in their social skills development and that children can be meaningfully grouped into distinct trajectory classes. A model comparison process revealed that a 3-class solution fits the data best. A closer examination of the finding that children's social skills generally seem to increase slightly over time revealed that, in fact, most children (72%) follow a Moderate-Stable trajectory. Perhaps more surprising and important for teachers and interventionists, we also found that some children (14%) follow a High-Declining

trajectory while an equally small group (14%) follows a Low-Increasing trajectory. The High-Declining group may be considered at high risk of social exclusion and other negative life outcomes.

Other studies have also found that there is heterogeneity in children's social skills development during the primary school-years.

Trajectories and school-related predictors

Moderate-stable group

The vast majority of the children followed the Moderate-Stable trajectory of social skills development. As expected, for most children, higher social skills scores at the beginning of primary 4 were predicted by positive relationships with peers and teachers, and by being a student in a school where the staff experienced greater collective efficacy.

Perhaps more surprising was that higher rates of problem behavior in the classroom in 4th primary also predicted these children's initial social skills scores in 5th primary (intercept). Prior research has shown that social skills and problem behavior are not mere opposites. Said differently, socially skilled students may also display some unruly behavior, and children who are less socially skilled can be quiet and reserved and thereby contribute to a more reticent classroom environment. Thus, the question becomes, why does an aggregated measure of problem behavior in the class predict greater initial social skills scores for the majority of children in this sample? One explanation may be that a few students only are responsible for disruptive behaviors and compared to them, most other students appear (and indeed probably are) more socially competent. Second, in classrooms with frequent problem behaviors, most children may learn more quickly to navigate socially and find ways to relate to the student role and classmates in adaptive ways. It may also be that in classrooms characterized by frequent incidents of disturbing behaviors, teachers soon realize a need for clear behavior expectations and proactive disciplinary practices in order to reduce disruption or to promote the students' social skills.

In line with expectations, higher teacher collective efficacy and low prevalence of classroom problem behavior predicted greater growth in social skills over time (slope) in this trajectory class. Thus, it seems that growth in social skills in the later Classes of primary school is more likely to occur in more orderly classrooms and in schools where the teachers report a greater common faith in their capacity to support students. Contrary to expectation, growth in social skills in this group also was negatively predicted by student-rated student-teacher relationship. This may reflect a tendency of teachers and students to place emphasis on different aspects of their relationship or that students who early on feel close to their teachers have more trouble shifting their relationship-focus to peers and thus appear less socially skilled. The correlation between the slope and intercept was non-significant in this group.

High-declining group

A negative correlation between the intercept and slope indicated that students in High-Declining group with the highest social skills scores by primary 4 showed the greatest decline over time. Positive student-teacher relationships (student-rated) predicted greater social skills scores in primary 4 (intercept) in this trajectory group, while greater student-student relationship predicted lower initial scores. These results suggest that a child in this trajectory group who rate the relationship with the teacher as positive feels supported by and dependent on her teacher, and that she may seek the company of and support from teachers at the expense of cultivating friendships with classmates and peers. Although many teachers initially may perceive a child that frequently seeks adult acknowledgment and attention as socially competent, the negative trend in the social skills ratings over time suggests that they gradually change their minds. As these children move on to 5th, 6th and 7th primary, the teachers may come to see them as clingy or socially helpless rather than as socially

competent. Another plausible explanation is that teachers gradually become aware of these children's lack of peer involvement and rate their social skills accordingly.

Lower teacher collective efficacy scores also predicted a higher level of initial social skills in this trajectory class. Perhaps in schools where there is little consensus about the teachers' joint capability to promote students' social functioning, teachers are less in a position to identify "warning sign" of unfortunate social skills development, such as a student's overly reliance on teachers.

The only factor that predicted the slope in the High-Declining group was student-student relationships. This finding suggests that the general downward slope in this trajectory class is somewhat less steep for children who score more positively on student-student relationships in 4th primary. Thus, it seems that if there is anything that can "save" these "teacher's pets" from becoming gradually less socially competent, it is getting along with their classmates early on.

Low-increasing group

There was a non-significant association between the slope and intercept in the Low-Increasing group. In accordance with the evidently positive trend in the teachers' social skills ratings over time, this subgroup may alternatively be spoken of as "late bloomers" or "social survivors." The labels reflect that although they by primary 4 are perceived by their teachers as the socially less skilled, their social skills improve as they gradually experience social success, and the more socially skilled they become, the more positive reinforcement they get. In other words, gaining social competence is rewarding and at the end of primary school, the teachers see these students as highly socially skilled children who enjoy making friends and being socially active in class.

As for the Moderate-Stable group, more positively rated relationships with classmates predicted higher initial intercept scores in the Low-Increasing group. Moreover, positive peer relationships paired with a classroom climate with lower rates of problem behavior predicted greater growth (slope) in these students' social skills over time. On the other hand, a positive student-teacher relationship score was associated with less increase in social skills scores over time for this trajectory group as well.

These results suggest that for the children in both of these trajectory classes – and in accordance with our hypotheses on what went on in the High-Declining group, a relationship with the teachers which the children perceived as highly positive, seemed less conducive to growth in social skills over the latter part of the primary school-years.

Taken together, the school-related predictors tested in this study affected children's social skills in the three trajectory classes differently. The role of rater (student versus teacher) seems particularly important to consider in this regard. Our analyses revealed that student-student and student-teacher relationships as rated by the students themselves stood out as more influential than the level of problem behavior in class and teacher's perceived collective efficacy. From the study results, it seems that for most students, a proper and competent classroom management accompanied by rich opportunities for positive relationships with peers is more favorable to their social skills development than one-to-one interactions with teachers.

Gender differences

In line with evidence from numerous, the current results showed that girls on average scored higher on social skills than did boys at all measurement points. The gender differences were, however, greater for the initially less socially skilled children (Low-Increasing) than for the initially more skilled children (High-Decreasing). Thus, socially skilled boys and girls appear more alike, whereas socially unskilled boys and girls seem more different, with boys scoring considerably lower than girls.

Such gender differences have been tentatively explained by teachers' biased gender expectations regarding socially competent behavior. That is, teachers may anticipate boys to show less adaptive behavior and girls to behave more compliant .. However, this explanation seems inadequate

since boys generally receive significantly lower scores than girls regardless of informants or context. It may be the case, as others have suggested, that girls' higher social skills ratings reflect earlier maturity, greater self-regulation, and social adaptability compared to boys. Few prior studies have examined whether the generally observed difference in the level of social skills favoring girls decrease, increase, or is stable across years. Interestingly, in two of the latent trajectory classes in the current study (Moderate-Stable and Low-Increasing) being a boy was associated with a steeper upward slope, perhaps indicating that boys may "catch-up" over time.

Strengths, limitations, and future directions

Few studies have explored predictive relationships between school-related characteristics and the development of students' social skills. The present study adds to the knowledge base by exploring how student-student relationship, student-teacher relationship, problem behavior in class, and teacher collective efficacy influence the development of social skills in different groups of children. However, several other important influences are likely at play in shaping children's social skills development (e.g., parenting practices, social training, and classroom leadership). Future research could expand on the current study by including additional predictors.

Other strengths of the study are the inclusion of a good sample of typically developing primary school children and the use of a well-validated and comprehensive measure of social skills across five time points. On the other hand, the children's social skills were rated in one context and by teachers only, which may be noted as a limitation. Although teachers have been found to be reliable raters of children's social skills. Moreover, there is a newer version of the social skills scale, the SSIS (Social Skills Improvement System, Gresham & Elliott) than the one used in the current study. However, SSIS was not available at the time the study was initiated, and change of measure across assessment points was not seen as adequate. We preferred the SSRS version also to enable comparisons of the results with those of earlier studies.

We did not assess the students' level of risk, which may be an important precursor or covariate in models such as ours. Furthermore, the assessment of social skills started in 4th primary and by this point in time teachers' perceptions of students' social skills may be fairly well established, in the sense that teachers may view and therefore rate children based on earlier opinions about and experiences with their students. Besides, some unexpected findings emerged. For example, in both the Moderate-Stable and Low-Increasing trajectory, higher student-teacher relationship predicted less growth in social skills over time (although student-teacher relationship did positively predict the intercepts).

From the results, strengthening student-student relationships seems especially important in order to curb a decline or encourage an increase in children's social skills over time. In particular, teachers ought to be attentive to students who are too close or too dependent on them, although many of these students behave well and rarely misbehave. Excessive reliance on adults may back-fire' on the children and render them helpless or inexperienced in peer interactions. For some students, problem behavior in the classroom also seems to be a risk factor for their development of social skills. Perhaps classroom environments characterized by noise and disorder rob certain children of opportunities to exercise pro-social skills. A well-led and orderly classroom is not only conducive to academic learning but also models appropriate behavior and communicates rules for acceptable and positive behavior. Clearly, it would be of great importance for future studies to see whether the observed associations between school-factors and social skills trajectories can be replicated, preferably in longitudinal studies using reliable measures of social skills.

Moreover, we did not test the interaction effects of the predictors and so the potential for one predictor (e.g., student-teacher relationship) to affect social skills development depending on levels in another predictor (e.g., problem behavior in class) remains untested. It would be interesting in future studies to examine such interactions, for example, problem behavior in class may exert more influence on children's social skills development in cases of lower relationship quality with peers. Finally,

because this study was conducted in schools delivering some kind of measures to increase a positive learning environment, caution must be exercised when interpreting the social skills means across time points. It can, however, be noted that the social skills mean score at baseline corresponded well with the mean score in a sample of same-aged students from a representative sample of Kerala schools indicating a normal sample and that the study results are valid beyond the current sample, at least within the Kerala context. Moreover, we re-ran the final model adding school program type as a predictor. It did not change the curves of the trajectories, the proportions of students in each trajectory, nor the direction of effects of each of the other predictors. This additional model testing supports the robustness of our results.

CONCLUSIONS

The current study adds to the empirical foundation showing that children's development of social skills during middle childhood seems to follow a differentiated and complex pattern. The most noteworthy findings indicate that the level (intercept), shape, and direction of children's social skills trajectories (slope) are partly dependent on qualitative and modifiable aspects of the school context. Particularly, the students' relationships with their peers and teachers seem influential – for “better or worse.” However, more large-scale longitudinal studies are necessary before conclusions can be drawn.

ACKNOWLEDGMENTS:-

This research was supported by Child Development Center (CDC) and in part by a grant from the Kerala Directorate for Education and Training.

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