Journal of Adolescent Health 69 (2021) S5–S15

ELSEVIER

JOURNAL OF ADOLESCENT HEALTH

www.jahonline.org

Original article

The Social Context of Early Adolescents in the Global Early Adolescent Study

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Article history: Received April 10, 2020; Accepted January 22, 2021
Keywords: Early adolescence; Family influences; School and peer factors; neighborhood factors; Media influences

A B S T R A C T

Purpose: This paper used data from the Global Early Adolescent Study (GEAS) to provide a descriptive analysis of how early adolescents' social environments vary by sex across diverse cultural settings.
Methods: The analyses were based on baseline data among 10–14-year old adolescents living in disadvantaged urban areas in seven sites: Kinshasa (DRC), Shanghai (China), Cuenca (Ecuador), Lampung, Semarang and Denpasar (Indonesia), and Flanders (Belgium). Except in Kinshasa where face-to face interviews were used, data were collected using self-administered surveys on mobile tablets. Social environments were measured by examining factors within five main domains, including the household and family, school, peers, neighborhoods, and the media. Site-specific descriptive analyses were performed, using Chi square tests and Student T-tests to identify sex-differences in each site.
Results: The majority of early adolescents lived in two-parent households, perceived their parents/guardians cared and monitored them, had at least one friend, reported high educational aspirations, and perceived their neighborhoods as safe, socially cohesive, with a high level of social control. Yet, large gender and site differences were also observed. More girls reported same-sex friends and high levels of parental monitoring, while boys were more likely to have mixed-sex friends and spend greater amounts of time with friends. Adolescents in Kinshasa and Semarang watched the most TV per day, while higher proportions of adolescents in Flanders used social media on a daily basis. Significant gender differences in media use were also observed but varied according to site.
Conclusions: Understanding how social contexts differ between boys and girls across sites has relevance for how we might examine gender attitude formations and subsequent health behaviors.

IMPLICATIONS AND CONTRIBUTION

This study demonstrates that the lives of boys and girls differ distinctly across cultural settings. While the majority of adolescents share many similar characteristics within the family, school, peer, neighborhood, and media domains, there are also striking gender and geographic variations which need to be considered for promoting health.

Conflicts of interest: None of the authors have potential conflicts of interest to be disclosed.
Disclaimer: Publication of this supplement was supported by the Johns Hopkins Bloomberg School of Public Health Department of Population, Family and Reproductive Health with funding from the Bill and Melinda Gates Foundation.
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https://doi.org/10.1016/j.jadohealth.2021.01.024

Given the increased attention on the importance of early adolescence for shaping gender attitudes and norms, implementing approaches that consider the differences in boys' and girls' lives may hold the most promise for creating sustained and improve change.

Early adolescents (those under age 15 years) account for nearly half of the 1.2 billion adolescents worldwide, of whom approximately 90% live in low-and middle-income countries [1]. Long considered to be one of the healthiest stages of life, early adolescence is also one of the most critical developmental periods. Physically, this is the age when most adolescents reach puberty and experience immense cognitive and emotional changes [2]. Socially, it is also a time when boys and girls are increasingly separated into their expected gender roles and responsibilities. In many societies, girls are assigned to more household tasks and lose their freedom to go outside or have leisure time, while boys tend to have fewer household chores and more freedom for play, socialization, or work [3,4].

These different gender expectations and values can impact on divergent health risks for boys and girls. Girls are particularly vulnerable to sexual and reproductive health risks. By their 19th birthday, 11 percent of all girls around the world are already mothers, while 27 percent are married by 18 years of age [5]. Boys, on the other hand, are more likely to smoke, drink alcohol, and suffer both intentional and unintentional injury and death before their 20th birthday compared to their female counterparts [6]. Among older adolescents (ages 15–19 years), substantial research shows that differential social contexts in which boys and girls grow up, play a critical role in determining their opportunities and access to resources that can shape their health and well-being [7,8]. Known broadly as the social determinants of health, these are the conditions in which people are born, live, learn, play, and grow that affect a wide range of health outcomes. The emergence of these gender differences in social contexts, however, is not well understood, as little research has focused on the social determinants of health in this early stage of development. For instance, to what extent do boys and girls have similar perceptions about their caregiver? Peer networks? Educational aspirations? To what extent do boys versus girls 10–14 years use social media? Understanding how social determinants of health vary for girls and boys and the extent to which these differences are consistent across cultures can show us where and how boys' and girls' exposures to positive and negative influences contribute to their overall health trajectories, which in turn, can help us understand how best to meet their needs through global and context-specific programs and services.

The Global Early Adolescent Study (GEAS) is the first multinational study to explore the impact of gender norms on early adolescents' health and well-being across different cultural settings. The GEAS focuses on adolescents living in urban poor environments, a vulnerable and fast-growing population worldwide. Using a longitudinal design, the GEAS is particularly interested in how the social processes, particular gender socialization, shape early to middle adolescent health across societies.

This paper uses data from GEAS to provide a descriptive analysis of young people's lives and contexts to understand how early adolescents' social environments vary by sex across diverse cultural settings.

Methods

Sampling and recruitment

While the GEAS is currently operating in 12 sites across 10 countries, this descriptive analysis is based on baseline data that was collected in seven of the 12 GEAS sites: Kinshasa (DRC), Shanghai (China), Cuenca (Ecuador), Lampung, Semarang, and Denpasar (Indonesia), and Flanders (Belgium). The sites were selected because they represent a diversity of geographic, cultural and economic urban settings and because of their long-term research partnerships with the Hopkins coordinating center. In Indonesia, three cities were selected because they capture different ethnic, cultural and religious characteristics, economic structures and influence of globalization (e.g., social media, tourism). The sampling and recruitment procedures in each site are outlined in Table 1. The sampling strategy was mostly driven by the identification of schools in urban poor locations in each site. In Kinshasa, an out of school sample was also identified based on area of residence (living in the same neighborhoods as the adolescents in the in school sample). Trained local-site staff approached the parent/guardian of eligible adolescents to present the purpose and procedures of the GEAS study. After verifying eligibility criteria and obtaining parental consent, adolescents were contacted to present study information and obtain written assent to participate. Site ethical approval was granted by the relevant partner's ethics review committees. Additionally, each study site was approved or deemed exempt as secondary data analysis by the Johns Hopkins Bloomberg School of Public Health Institutional Review Board.

Data collection

Baseline data collection took place in schools or in community centers between 2017 and 2019. In every site except Kinshasa, surveys were self-completed using mobile tablets equipped with Computer Assisted Self Interview (CASI); in Kinshasa, data collection involved face to face interviews due to the lower level of literacy in this population. Completed surveys were uploaded to a secure SurveyCTO server and compiled into a site specific de-identified dataset.

Measures

The GEAS questionnaire included core modules across sites that were developed, tested and validated in extensive formative research across 14 sites across five continents. Translation and back-translation were conducted to ensure cross-site comparisons. For these analyses, we considered the following social contextual data from the survey:

Table 1
Description of site and sampling strategy

Site	Pop size	Sampling	Recruitment	Analytic sample size[c]
Kinshasa	14,079,849[a]	Both in-school and out-of-school youth were included as the baseline of an evaluation of a quasi-experimental study. Adolescents were sampled from two neighborhoods to facilitate follow-up for the intervention. ***In School Adolescents:*** In school adolescents were recruited in the same neighborhoods as OOS adolescents to facilitate follow-up for the intervention groups and avoid contamination across study groups. Community-based organizations mapped schools within the two selected communes. 20 schools in each commune and study arm (a total of 80 schools) were selected randomly, and within each school approximately 25 students were randomly selected (stratified by sex) to participate in the survey **Out of School Adolescents:** Local community-based organizations created rosters of all 10-14-year-olds in the selected communes who had been out of school for at least two years, did not expect to re-enroll in the following year, and did not expect to leave their neighborhood. Out-of-school adolescents in the control and intervention group were randomly selected from these rosters	For the in-school group, school leaders and research staff recruited participants together. Community-based organizations together with Save the Children helped recruit out-of-school adolescents.	2,809 (1,402 boys and 1,407 girls)
Shanghai	26,733,703[a]	Three public secondary schools were selected purposively in collaboration with key informants from a teacher's organization in the Jing'an District. One school in Baoshan sub-district with about 250 students in each grade and two schools in Pengpu sub-district, the first with about 200 and the second with about 100 students in each grade were selected. All eligible students in grades 6, 7 and 8 were recruited.	Study staff obtained approval for participation in person at school level, and using flyers and information sessions with participating parents and adolescents.	1,714 (871 boys and 843 girls)
Cuenca	414,061[a]	Seven schools were randomly selected within Cuenca, after stratification by neighborhood and school type. At each school, adolescents aged 10−14 years were randomly selected after stratification by age and sex.	Study staff obtained approval for participation in person at school level, and using flyers and information sessions with participating parents and adolescents.	614 (313 boys and 301 girls)
Flanders	6,580,000[b]	Schools were purposively selected based on the proportion of vulnerable students, (exhaustive sample of schools with highest proportions and purposive sampling of school with proportion above median). At each school (n = 23), the school board decided which classes could participate. In each selected class, all students were invited to participate.	Study staff obtained approval for participation in person at school level, and using flyers or school meetings with participating parents and adolescents.	1,008 (561 boys and 447 girls)
Indonesia-Lampung Indonesia-Semarang Indonesia-Denpasar	1,081,934[a] 1,851,558[a] 977,372[a]	In each city, three intervention schools where the intervention is implemented, and three matched controls were purposively selected. In the intervention group, all adolescents who attended grade 7 and who were receiving the SETARA intervention were invited to participate within each school. In the control schools, a random sample of grade 7 students were selected for participation.	Study staff obtained approval for participation in person at school level, and using flyers and information sessions with participating parents and adolescents.	1,090 (503 boys and 587 girls) 1,494 (674 boys and 820 girls) 1,705 (823 boys and 882 girls)

[a] https://populationstat.com.
[b] https://www.vlaanderen.be/en/discover-flanders.
[c] Analytic sample size includes cases with less than 15% of total data missing and with complete information used to construct gender norm scales across the supplement.

Table 2
Individual level factors

Site	Age		Pubertal onset		
	Mean	*p*-value	Pre-pubertal	Pubertal	*p*-value
Shanghai					
Overall	12.5	**.015**	9.3	90.7	**<.001**
Boys	12.5		12.3	87.7	
Girls	12.4		6.5	93.6	
Kinshasa					
Overall	11.9	.105	37.3	62.7	**<.001**
Boys	12.0		48.0	52.1	
Girls	11.9		27.0	73.0	
Cuenca					
Overall	12.0	.344	12.5	87.5	**.025**
Boys	12.1		15.6	84.4	
Girls	12.0		9.4	90.6	
Flanders					
Overall	13.2	**<.001**	2.6	97.4	.370
Boys	13.3		2.2	97.8	
Girls	13.1		3.1	96.9	
Indonesia Lampung					
Overall	12.2	**<.001**	9.7	90.3	**.034**
Boys	12.3		11.9	88.1	
Girls	12.1		7.9	92.1	
Indonesia Semarang					
Overall	12.2	**<.001**	5.3	94.7	**<.001**
Boys	12.3		9.5	90.5	
Girls	12.2		2.1	97.9	
Indonesia Denpasar					
Overall	12.2	**.022**	8.5	91.5	**.009**
Boys	12.2		10.4	89.6	
Girls	12.1		6.7	93.3	

Bold indicates $p \leq .05$.

1) *Individual characteristics:* respondent's age and pubertal onset. Pubertal onset for boys was defined as affirmative responses to any of three questions for boys: a) have you started puberty, for example has your penis or testicles started to get larger compared to when you were younger? b) do you speak in a deeper voice compared to when you were younger; c) have you started growing a beard? For girls this was assessed by two questions: a) have your breasts started to grow/become larger? b) have you started to have periods?
2) *Family:* family structure (lives with both parents, one parent, no parents), number and sex composition of siblings, and parent connectedness (assessed by "do you feel close to your main caregiver? By close, we mean you talk to that person and tell them about personal and important things), and parental awareness/monitoring (assessed by caregiver's knowledge of: adolescents' friends by name, their grades or school performance, and general whereabouts);
3) *Peer:* size of peer network, peer sex composition (no close friends vs. any opposite-sex friends), and time spent with friends (assessed by: "during a normal week, how often do you spend hanging out with your closest friends outside of school?)
4) *School:* School status (out of or behind in school vs. at expected school grade for age), education aspirations (assessed by: "how much school do you think you will complete?"), parental educational aspirations, and teacher connectedness (assessed by: "do you feel there is an adult (a teacher or someone else) at school who really cares about you?")
5) *Neighborhood:* neighborhood social cohesion, defined as trust and investment in the neighborhood (assessed by: "how much do you think the following are true: people in my neighborhood look out for and help their neighbors; people in my neighborhood can be trusted; people in my neighborhood know who I am; and people in my neighborhood care about me) [9]; perceived safety of neighborhood, and neighborhood social control (assessed by adolescents' perceptions of the likelihood adults would intervene in the event of property damage, graffiti, bullying or threatening, or fighting) [10].
6) *Media:* amount of TV watching per day; amount of social media use per day; exposure to pornography (dichotomized by sometimes/often vs. rarely/never).

Analysis

We first examined missingness in each of the seven site's samples, dropping cases missing 15% or more across the survey. Using these criteria, we excluded between 3% (in Kinshasa) and 21% (in Lampung) of the samples. We conducted site-stratified descriptive analyses, examining distributions in socio-ecological factors in each site. Additionally, we tested for sex-differences in each set of factors using chi square tests and Student's *t*-tests.

Results

Results are reported by level of social context: individual, family, peers, school, neighborhood, and media factors. In each level, boys' and girls' environments are compared to examine how sex differences vary by context. Due to the large volume of data, only significant differences and patterns are discussed.

Table 3
Family level factors

Site	Household composition				Number of siblings					Sibling sex composition				Close to caregiver		Caregiver monitoring	
	No parents	One parent only	Yes both parents	*p*-value	No siblings	1–2 siblings	3–5 siblings	6 or more siblings	*p*-value	No siblings	Same sex siblings only	Different sex or mixed sex siblings	*p*-value	Yes	*p*-value	High	*p*-value
Shanghai																	
Overall	4.7	11.5	83.8	.545	61.3	23.8	5.5	9.3	**<.001**	61.3	9.0	29.6	**.016**	86.1	.14	83.1	**<.001**
Boys	4.6	10.7	84.7		58.8	22.7	6.8	11.7		58.8	10.8	30.4		84.8		78.6	
Girls	4.7	12.3	82.9		63.9	24.9	4.3	6.9		63.9	7.2	28.8		87.3		87.9	
Kinshasa																	
Overall	14.3	28.3	57.4	.592	2	15.8	49.1	33.1	.364	2.0	9.6	88.4	.844	86.4	.606	38.1	**<.001**
Boys	14.2	29.2	56.6		1.9	16.1	47.6	34.5		1.9	9.5	88.7		86.7		34.6	
Girls	14.5	27.4	58.1		2.1	15.6	50.5	31.8		2.1	9.7	88.1		86.0		41.5	
Cuenca																	
Overall	3.6	30	66.4	.760	6.7	56.2	32.1	5	.580	6.7	23.9	69.4	.215	93.0	.219	76.3	.693
Boys	3.5	31.3	65.2		6.1	58.8	30	5.1		6.1	26.8	67.1		94.2		75.6	
Girls	3.7	28.6	67.8		7.3	53.5	34.2	5		7.3	20.9	71.8		91.7		77.0	
Flanders																	
Overall	11.8	12.2	76	.155	6.7	47.1	37.4	8.7	.898	6.7	19.5	73.7	.853	95.1	.159	74.8	**<.001**
Boys	13.5	11.8	74.7		6.4	48	36.7	8.9		6.4	20.0	73.6		96.0		68.3	
Girls	9.6	12.8	77.6		7.2	46.1	38.3	8.5		7.2	19.0	73.8		94.0		83.0	
Indonesia Lampung																	
Overall	9.4	8.2	82.5	**.004**	5.5	38.3	29.9	26.3	**<.001**	5.5	16.7	77.8	**.006**	87.8	**.001**	59.3	**.002**
Boys	12.5	7.6	79.9		3.8	30.4	32	33.8		3.8	19.7	76.5		84.0		54.3	
Girls	6.6	8.7	84.7		7.0	45	28.1	19.9		7.0	14.1	78.9		91.0		63.7	
Indonesia Semarang																	
Overall	4.1	8.4	87.5	**.031**	9.0	57.2	16	17.8	**<.001**	9.0	24.6	66.5	.665	85.5	.201	60.3	**<.001**
Boys	5.6	8	86.4		8.8	50.6	19.9	20.8		8.8	25.7	65.6		86.8		53.6	
Girls	2.9	8.7	88.4		9.1	62.7	12.8	15.4		9.1	23.7	67.2		84.5		65.8	
Indonesia Denpasar																	
Overall	4.5	5.6	89.9	**.001**	8.1	55.6	22.7	13.6	**.002**	8.1	21.7	70.2	**.008**	90.5	.112	67.8	**<.001**
Boys	6.4	5.2	88.3		7.5	52.7	23	16.8		7.5	24.9	67.6		89.3		63.0	
Girls	2.7	6	91.3		8.6	58.3	22.4	10.7		8.6	18.7	72.7		91.6		72.3	

Bold indicates $p \leq .05$.

Table 4
Peer level factors

Site	Number of friends				Sex composition of friends				Time spent with friends			
	No friends	1–2 friends	>2 friends	*p*-value	No friends	Same-sex friends only	Any opposite-sex friends	*p*-value	No friends or no time	Often (1–4 times a week)	Nearly every day	*p*-value
Shanghai												
Overall	5.1	21	73.8	.197	5.1	40.4	54.5	**<.001**	40.7	52.6	6.8	**.021**
Boys	6.1	20.7	73.2		6.1	34.8	59.1		41.9	49.9	8.1	
Girls	4.1	21.4	74.5		4.1	46.0	49.9		39.4	55.2	5.4	
Kinshasa												
Overall	4.5	30.6	64.9	**<.001**	4.5	55.0	40.5	**<.001**	6.3	44.0	49.7	**<.001**
Boys	3.3	28.9	67.8		3.3	52.4	44.3		4.1	39.7	56.3	
Girls	5.7	32.2	62.1		5.7	57.5	36.8		8.6	48.3	43.1	
Cuenca												
Overall	2.3	17.3	80.4	.096	2.3	23.6	74.1	.148	37.9	44.3	17.8	**.006**
Boys	3.2	14.9	81.9		3.2	21.4	75.4		31.7	48.4	19.9	
Girls	1.4	19.9	78.8		1.3	25.9	72.7		44.3	40.0	15.7	
Flanders												
Overall	1.9	13	85.1	.061	1.9	30.6	67.5	**.002**	18.2	61.9	19.9	**<.001**
Boys	2.4	10.9	86.7		2.4	26.0	71.6		16.1	58.6	25.4	
Girls	1.2	15.5	83.3		1.2	36.2	62.6		20.9	66.0	13.1	
Indonesia Lampung												
Overall	2.6	19.1	78.3	.544	2.6	33.1	64.2	**<.001**	10.4	48.4	41.2	**<.001**
Boys	3.2	19.6	77.3		3.2	26.9	69.9		9.0	37.3	53.7	
Girls	2.2	18.7	79.2		2.2	38.4	59.4		11.6	57.8	30.5	
Indonesia Semarang												
Overall	2.8	19.2	78	**<.001**	2.8	34.3	62.9	**<.001**	8.1	60.2	31.6	**<.001**
Boys	4.7	20.2	75.2		4.6	28.5	66.9		9.4	49.9	40.7	
Girls	1.3	18.4	80.3		1.3	39.1	59.6		7.1	68.8	24.1	
Indonesia Denpasar												
Overall	2.6	17.6	79.9	.192	2.6	30.5	66.9	**<.001**	13.4	54.8	31.8	**<.001**
Boys	3.3	17.7	79.0		3.3	23.5	73.2		12.2	46.5	41.3	
Girls	1.9	17.5	80.6		1.9	37.0	61.1		14.6	62.4	22.9	

Bold indicates $p \leq .05$.

Individual characteristics

Across the seven sites, the mean age of the samples ranged from 11.92 to 13.22, with the youngest cohort in Kinshasa and the oldest in Flanders. Coinciding primarily with the mean age difference, more than a third of the sample in Kinshasa (37.3%) were pre-pubertal compared to only 2.6% in Flanders. With the exception of Flanders, significant sex differences in pubertal status were noted, with more girls reaching puberty than boys. See Table 2 for further details.

Family factors

Kinshasa had the highest proportion of adolescents living with no parent (14.3%); while in other sites, this ranged between 3.6% and 11.8%. The three Indonesian sites (Lampung, Semarang, and Denpasar) had significant gender differences in family structure, in which a higher proportion of boys compared to girls lived with neither parent. In addition, adolescents in Kinshasa reported the highest number of siblings (a third reporting at least six siblings), while adolescents in Shanghai had the lowest (nearly two thirds have no siblings). Gender differences in number of siblings were seen in Shanghai and in all three sites of Indonesia, in which more boys reported more siblings than girls. More boys than girls reported both brothers and sisters in Shanghai, while mixed-sex sibling structures were more common among girls than boys in Lampung and Denpasar, Indonesia.

Most adolescents reported high parental connectedness across all sites, from 85.5% in Semarang to 95.1% in Flanders. Adolescents also perceived high levels of caregiver awareness/monitoring, with the largest proportion of adolescents reporting so in Shanghai (83.1%), and the smallest proportion in Kinshasa (38.1%). Only in Lampung were there significant gender differences in caregiver connectedness, with more girls reporting high connectedness than boys ($p = .002$). Meanwhile, for caregiver awareness/monitoring, more girls reported caregiver awareness/monitoring compared to boys, and these differences were statistically significant in every site except Cuenca. See Table 3 for further details.

Peer factors

As observed in Table 4, most adolescents reported having at least one close friend. Half of adolescents in Kinshasa, and 40% of those in Lampung reported spending time with their close friends every day. Contrastingly, only 6.8% of Shanghai adolescents indicated spending time with their friends every day. Gender differences were found in every site, with boys spending more time with their friends than girls. There were also significant gender differences in the proportion of adolescents having same-sex versus mixed-sex friendships, with higher proportions of girls having only same-sex friends than boys (in Cuenca the difference was not statistically significant).

School factors

Across sites, the majority of adolescents had high educational expectations with most anticipating they would obtain at least an undergraduate degree. Large gender differences in expected school completion were observed in Flanders and in all Indonesian sites, where higher proportions of girls compared to boys thought they would obtain at least an undergraduate degree in

Table 5
School level factors

Site	Adolescent's expected school completion			Parental expectation for education			Feels cared for by adults in school	
	Less than undergraduate	Undergraduate or higher	*p*-value	Less than undergraduate	Undergraduate or higher	*p*-value	Yes	*p*-value
Shanghai								
Overall	6.1	93.9	.129	5.3	94.7	**.033**	91.8	.388
Boys	7.0	93.0		6.5	93.5		92.3	
Girls	5.2	94.8		4.1	95.9		91.2	
Kinshasa								
Overall	15.1	84.9	.327	20.8	79.2	.133	74.6	**<.001**
Boys	14.3	85.7		19.7	80.3		80.1	
Girls	15.9	84.1		22.0	78.0		69.5	
Cuenca								
Overall	10.8	89.2	.981	3.8	96.2	.432	64.8	.142
Boys	10.7	89.3		3.2	96.8		61.9	
Girls	10.8	89.2		4.5	95.5		67.9	
Flanders								
Overall	22.7	77.3	**<.001**				33.9	.617
Boys	29.8	70.2					33.2	
Girls	13.6	86.4					34.9	
Indonesia Lampung								
Overall	27.1	72.9	**<.001**	18.8	81.2	**<.001**	82.8	.531
Boys	39.4	60.6		29.3	70.7		82.0	
Girls	16.8	83.2		10.0	90.0		83.5	
Indonesia Semarang								
Overall	22.2	77.8	**<.001**	14.1	85.9	**<.001**	77.5	.115
Boys	32.4	67.6		22.6	77.4		75.6	
Girls	13.8	86.2		7.5	92.5		79.2	
Indonesia Denpasar								
Overall	17.7	82.3	**<.001**	10.9	89.1	**<.001**	76.9	.377
Boys	23.8	76.2		15.0	85.0		77.8	
Girls	12.1	87.9		7.2	92.8		76.0	

Bold indicates $p \leq .05$.

the future. There were also gender differences with caregiver educational expectations: In Lampung, 70.7% of boys believed their parents wanted them to have at least an undergraduate degree compared to nearly 90.0% of girls ($p < .001$). Similar trends were observed in the other two Indonesian sites. With the exception of Flanders, 60%–90% of adolescents felt that an adult at school cared about them. In Flanders only a third of adolescents felt cared for by an adult at school. Kinshasa was the only site where more boys (80%) than girls (70%) reported that an adult at school cared about them ($p < .001$). See Table 5 for further details.

Neighborhood factors

As shown in Table 6, Semarang had the highest proportion of adolescents reportedly living in socially cohesive neighborhoods (67.3%), while Kinshasa had the lowest proportion (29.6%). Boys in Kinshasa, Semarang, and Denpasar were significantly more likely than girls to perceive their neighborhoods as socially cohesive. Nearly all adolescents in Shanghai felt safe in their neighborhoods (96.3%), compared to only 66.9% of adolescents in Lampung. Different patterns of gender differences were observed with perceived safety compared to perceptions of social cohesion. In Kinshasa and Lampung, a higher proportion of girls felt safe compared to boys, whereas in Flanders, the reverse was true. In general, the majority of adolescents perceived a high level of social control, or a belief that adults would intervene to protect community members or spaces in their neighborhood; with a high of 82.1% in Kinshasa to a low of around 48.6% among adolescents from Lampung. In all Indonesian sites, significant gender differences were also observed, in which girls perceived a much higher level of neighborhood social control compared to boys. Meanwhile, girls in Kinshasa reported lower perceived social control than boys (80.0 vs. 84.2, $p = .005$).

Media

Adolescents in Kinshasa and Semarang watched the most TV per day, with more than a third at each site reporting watching TV for at least 3 hours daily. In contrast, in Shanghai, only 7.3% of adolescents reported watching that much TV. Significant gender differences in TV watching were observed in Shanghai, Kinshasa, Semarang, and Denpasar. In Kinshasa, a higher proportion of boys watched TV in comparison to girls, while in Shanghai, Semarang, and Denpasar, the reverse was true, with more girls watching TV daily. A different pattern emerged with social media use. Kinshasa adolescents were least likely to use social media, with 83.2% reporting not using any social media compared with 1.2% of Flemish adolescents; and there, nearly two-thirds of respondents reported using social media for at least three hours a day. Notably, girls were significantly more likely to use social media than boys in Shanghai ($p = .007$), Semarang ($p = .001$) and Denpasar ($p < .001$). In Cuenca and Kinshasa, however, boys were significantly more likely to use social media than to girls ($p = .007$ and $p < .001$, respectively). 20 percent of Flanders' adolescents reported sometimes or often watching pornography compared to less than 10 percent of adolescents in other sites. Large gender differences were also noted across all sites, with more boys reportedly watching pornography than girls. See Table 7 for further details.

Table 6
Neighborhood level factors

Site	Neighborhood cohesion			Neighborhood safety			Neighborhood Social control		
	Low	High	*p*-value	Not safe	Safe	*p*-value	Low	High	*p*-value
Shanghai									
Overall	36.8	63.2	.202	3.7	96.3	.61	24.1	75.9	.172
Boys	35.2	64.8		3.5	96.5		25.6	74.4	
Girls	38.3	61.7		4.0	96.0		22.7	77.3	
Kinshasa									
Overall	70.4	29.6	**<.001**	21.1	78.9	**<.001**	17.9	82.1	**.005**
Boys	64.2	35.8		24.7	75.3		15.8	84.2	
Girls	76.4	23.6		17.5	82.5		20.0	80.0	
Cuenca									
Overall	52.7	47.3	**.033**	17.3	82.7	.516	32.1	67.9	.908
Boys	48.2	51.8		16.3	83.7		31.9	68.1	
Girls	57.3	42.7		18.3	81.7		32.3	67.7	
Flanders									
Overall	54.6	45.4	**.037**	20	80	**<.001**			
Boys	51.0	49.0		15.3	84.7				
Girls	60.0	40.0		25.8	74.2				
Indonesia Lampung									
Overall	35.3	64.7	.952	33.1	66.9	**.021**	51.4	48.6	**.016**
Boys	35.2	64.8		36.8	63.2		55.7	44.3	
Girls	35.4	64.6		30	70		47.5	52.5	
Indonesia Semarang									
Overall	32.7	67.3	**.008**	30.1	69.9	.278	42.8	57.2	**<.001**
Boys	29.0	71.0		28.7	71.3		48.9	51.1	
Girls	35.8	64.2		31.3	68.7		37.3	62.7	
Indonesia Denpasar									
Overall	33.4	66.6	**<.001**	28.1	71.9	.156	44.8	55.2	**.005**
Boys	29.1	70.9		29.8	70.2		48.5	51.5	
Girls	37.4	62.6		26.6	73.4		41.3	58.7	

Bold indicates $p \leq .05$.

Discussion

This descriptive analysis provides an opportunity to learn more about the lives of early adolescents and the extent to which boys' and girls' social contexts vary across geographies. The results show several important similarities between boys and girls across sites, as well as a number of distinct differences.

First, at the family level, we observed that most adolescents reported living in two-parent households, felt close to their primary caregivers, and perceived their caregivers had awareness of their daily lives. However, there were also key differences by site and by gender. In Cuenca and Kinshasa, substantial proportions of adolescents lived either in single-parent or nonparent households, which has largely been attributed to outmigration for economic purposes in both sites [11,12]. These patterns are important because we know that families play a key role in gender socialization. Within this family context, however, it is less clear how different family structures shape gender expectations. In the United States, studies have shown that parents are more influential in modeling their children's gender-typical behavior when there are differences between mothers and fathers [13,14]. However, what happens when there is only one parent to model attitudes and behaviors? A study in Russia found that boys from single-parent families were characterized by a much higher level of masculinity compared to their peers in nuclear families. On the other hand, girls in single-parent households exhibited only a slightly more feminine personality compared to their peers in nuclear families [15]. Still, in China, researchers found that factors such as income, educational level, and the single parent's own gender attitudes were better predictors of the formation of children's gender roles than just single parenthood alone [16]. Given the diversity of family structures worldwide, it is possible that these different structures may even positively shape adolescents' perceptions of masculinities and femininities [17–19].

Significant gender differences in parental/caregiver awareness of their adolescent children were also observed across nearly every site, with girls much more likely to be supervised than boys. We saw this in the qualitative research of the GEAS when parents reported restricting girls' movement, while granting greater freedom to boys during their transition into adolescence [20]. Other studies across different cultural settings have also confirmed this finding [21–23]. While research demonstrates the importance of both parental closeness and awareness for positive health, studies in the United States have also found that boys' health may be more impacted by parental awareness compared to girls [24]. That said, the question as to why there is a gender gap in parental awareness is puzzling. Even in GEAS communities where parents are more likely to report that their sons are at greater risk for harm than their daughters, why are daughters more monitored? We suspect the answer lies within the broader gender system which portrays girls as weak and in need of more protection, while boys are perceived as strong and need to prove their toughness.

Adolescents' peer networks are another important source of socialization. During early adolescence, the relative importance of peers increases and positive feedback from peers becomes especially salient [25,26]. In our analysis, while most adolescents have at least one friend (a finding consistent with other research [27]), there were clear gender differences in both the sex composition of friends and the amount of time spent with them. Girls were generally less likely than boys to spend time with their friends and less likely to have mixed-sex peers. These differences can have significant implications, as peer dynamics act as a major site for the

Table 7
Media level factors

Site	TV watched per day				Social media use per day				Pornography		
	None	1–2 hours	3 + hours	*p*-value	None	1–2 hours	3 + hours	*p*-value	Never/Rarely	Sometimes/Often	*p*-value
Shanghai											
Overall	25.3	67.4	7.3	**.041**	23.1	66.8	10.1	**.007**	93.7	6.3	**.008**
Boys	27.6	64.6	7.8		26.3	64.2	9.5		92.1	7.9	
Girls	22.9	70.3	6.8		19.9	69.4	10.7		95.2	4.8	
Kinshasa											
Overall	23.8	41.6	34.6	**.023**	83.2	13.1	3.7	**<.001**	90.9	9.1	**<.001**
Boys	21.6	42.7	35.7		73.7	20.8	5.5		88.2	11.8	
Girls	26.0	40.6	33.4		92.7	5.5	1.9		93.7	6.3	
Cuenca											
Overall	6.2	77.7	16.1	.461	21.7	60.3	18.1	**.007**	96.2	3.8	**.002**
Boys	7.0	75.7	17.3		16.5	63.8	19.7		93.9	6.1	
Girls	5.3	79.7	15		27.0	56.7	16.3		98.7	1.3	
Flanders											
Overall					1.2	36.3	62.4	.893	79.7	20.3	**<.001**
Boys					1.3	35.7	63.0		66.3	33.7	
Girls					1.2	37.1	61.7		95.5	4.5	
Indonesia Lampung											
Overall	5.4	67.9	26.7	.151	8.3	64.6	27.1	.087	93.1	6.9	**<.001**
Boys	6.8	67.7	25.5		9.6	66.1	24.3		86.5	13.5	
Girls	4.3	68.0	27.8		7.2	63.4	29.5		98.6	1.4	
Indonesia Semarang											
Overall	1.8	59.4	38.9	**.002**	5.0	60.5	34.5	**.001**	96.4	3.6	**.001**
Boys	2.7	62.4	34.9		6.1	64.4	29.5		94.6	5.4	
Girls	1.0	56.9	42.1		4.1	57.3	38.5		97.9	2.1	
Indonesia Denpasar											
Overall	1.8	70.8	27.3	**.009**	2.8	70.5	26.7	**<.001**	95.0	5.0	**<.001**
Boys	2.0	74.1	23.9		3.7	73.9	22.4		91.3	8.7	
Girls	1.7	67.8	30.5		1.9	67.3	30.8		98.5	1.5	

Bold indicates $p \leq .05$.

production of gender inequalities, with peers becoming a vital source for gendered interactions and learning [8].

Turning to the school as another important institution for socializing early adolescents, our study found that a majority of adolescents had high educational aspirations. We also found that school connectedness was high across every site except Flanders, where less than a third felt that a teacher cared about them. Why this is the case warrants further exploration; one plausible explanation is that each subject is taught by a different teacher in these schools, and therefore students may not have known their teachers well (personal communication with Belgium PI, 2020). It also might be that young people's understanding of adult caring and support simply varies by culture, as Barber and colleagues (2005) demonstrated from their seminal study on global parent and adolescent relationships [28].

Our study also showed large gender differences related to education expectations in our Asian sites, as girls in Shanghai and Indonesia expected to complete more school compared to boys. In the three Indonesian sites, sex differences in parental educational expectations also followed this pattern. Although global attention on secondary education has been focused on girls in low-and-middle income countries, according to a recent report from UNESCO, boys are increasingly at an educational disadvantage in completing upper secondary and post-secondary education relative to girls [29]. In many low-income settings, traditional gendered labor roles can have an impact on boys' participation and aspirations to stay in school [30]. In general, boys tend to enter the workforce earlier, and if boys can obtain manual jobs without needing a secondary education, there is less motivation for them and their parents to keep them in school [29,31]. Whether these broader social forces are impacting what we are seeing vis á vis educational aspirations remains an open question but is worth greater attention because of the significant long-term consequences.

Neighborhood factors can also play a large role in determining the spaces where adolescents interact and spend time outside their house. In our study, while the majority of adolescents perceived their neighborhoods to be safe, socially cohesive, with a high level of social support, there were striking gender and site differences. For instance, while adolescents in Indonesia were more likely to perceive their neighborhoods were socially cohesive, they were less likely to perceive their neighborhoods had a high level of social support. The reverse was true for adolescents in Kinshasa, where adolescents perceived their neighborhoods as having a higher level of social control but lower social cohesion. In terms of perceived safety, adolescents in Shanghai felt the safest, whereas adolescents in Indonesia felt the least safe, with significant sex differences operating in different ways depending on the site. These findings support previous cross-cultural research on neighborhood factors and suggest that various urban settings exert differential influences on boys and girls [32]. Further research is needed to unravel the mechanisms that underlie the extent to which neighborhood factors in a given site influence the health trajectories of boys and girls.

Finally, exposure to the media brings greater exposure to gendered programming, stereotypes, as well as opportunities to experience alternative gender roles and identities [33]. Findings from our study highlight key differences in the extent to which boys and girls are exposed to various media platforms. In Kinshasa, adolescents were more likely to watch TV than to use social media; and boys were more exposed to TV and social media compared to girls. However, in Shanghai and in two Indonesian sites, girls were more likely to watch TV and use

social media. These differences may reflect differential access to resources and technology across the sites. In Kinshasa, access to technology is far more limited than what exists in Shanghai or Flanders, yet boys have greater access than girls. This is consistent with research in India and elsewhere that has shown that where media access is limited, parents are reluctant to allow daughters access for fear they will use it for illicit purposes [34]. In sites where access is more universal, girls seem to be using more technology.

One particular media platform that has been debated as a tool for reinforcing stereotypical gender attitudes is pornography. In our study, less than 10% of adolescents across sites reported viewing pornography. The exception was among boys in Flanders, where nearly a third of early adolescent boys reported sometimes or often watching pornography. While previous research has shown consistent relationships between pornography consumption and sexual risk behaviors [35,36], findings are mixed as to the relative importance of pornography on gender attitudes. More research on the influence of pornography and other forms of media on adolescent health in low-and-middle-income settings is needed since it appears that increasing numbers of young people, boys in particular, are accessing pornographic material from mobile phones and the Internet in low-and-middle-income countries [37].

Limitations

There are several key limitations worth mentioning. First, in Kinshasa, although an out-of-school sample is enrolled in the study, we combined both in-school and out-of-school samples to make consistent comparisons across sites for the analyses. Related, it is important to point out that in each site, sample size, as well as recruitment and sampling strategies varied. Samples are not representative of early adolescents in country or city settings. Cuenca has the smallest sample ($n = 579$), which may have impacted on the lack of statistical significance for this site on several of the findings. Finally, in this paper, gender is conflated with sex in the absense of data on gender identity; as a consequence, the comparisons between boys and girls does not account for gender fluidity and atypical gender identities.

Conclusions

Despite these limitations, this study highlights the complex webs of interactions within adolescents' social contexts across the world. We learned that while the majority of adolescents share many similar characteristics within the family, school, peer, neighborhood, and media domains, there are also striking sex and site variations. Understanding both the similarities and differences between boys and girls across sites has particular relevance for how we might examine gender attitude formations and subsequent health behaviors across cultural settings. Given the increased attention on the importance of early adolescence for shaping gender attitudes and norms, implementing approaches that consider the differences in boys' and girls' lives will surely hold the most promise for creating sustained and improve change.

Acknowledgments

This work was supported by the UNDP-UNFPA-UNICEF-WHO-World Bank Special Programme of Research, Development and Research Training in Human Reproduction (HRP), a co-sponsored programme executed by the World Health Organization (WHO) and the Bill & Melinda Gates Foundation [OPP1125119 and OPP1178415], and the Packard Foundation [grant number 2017-66517]. Support for each Global Early Adolescent Study site is provided by the Bill & Melinda Gates Foundation [OPP1197258] and the United States Agency for International Development [AID-OAA-A-15-00042] in Kinshasa, the Innovation-oriented Science and Technology Grant from Chinese National Health Commission Key Laboratory of Reproduction Regulation [CX2017-05] in Shanghai, the fund for scientific research Flanders and the Flemish Ministry of Innovation, Public investment, Media and Poverty Reduction in Belgium, the National Secretary of Science and Technology SENESCYT of Ecuador in Cuenca, and the Bill & Melinda Gates Foundation [OPP1178415] in Indonesia.

This work was supported by the Bill & Melinda Gates Foundation, Seattle, WA [grant numbers OPP1125119 and OPP1178415], the World Health Organization [grant number 2019/962212], and the Packard Foundation [grant number 2017-66517]. The authors would also like to thank Mengmeng Li for her assistance with data analysis, as well Quinn Barnette for his assistance on manuscript formatting.

References

[1] Population Division, United Nations Department of Economic and Social Affairs. World population prospects. 2015. Available at: https://esa.un.org/unpd/wpp/dataquery. Accessed January 16, 2020.
[2] Woog V, Kågesten A. The sexual and reproductive health needs of Very young adolescents aged 10–14 in developing countries: What does the Evidence show? New York: Guttmacher Institute; 2017.
[3] Igras SM, Macieira M, Murphy E, Lundgren R. Investing in very young adolescents' sexual and reproductive health. Glob Public Health 2014;9:555–69.
[4] McCarthy K, Brady M, Hallman K. Investing when it Counts: Reviewing the Evidence and Charting a Course of research and action for Very young adolescents. New York: Population Council; 2016.
[5] Gore FM, Bloem PJN, Patton GC, et al. Global burden of disease in young people aged 10-24 years: A systematic analysis. Lancet 2011;377:2093–102.
[6] Patton GC, Sawyer SM, Santelli JS, et al. Our future: A Lancet commission on adolescent health and wellbeing. Lancet 2016;387:2423–78.
[7] Sawyer SM, Afifi RA, Bearinger LH, et al. Adolescence: A foundation for future health. Lancet 2012;379:1630–40.
[8] Kågesten A, Gibbs S, Blum RW, et al. Understanding factors that shape gender attitudes in early adolescence globally: A mixed-Methods systematic review. PLoS One 2016;11:e0157805.
[9] Sampson RJ, Raudenbush SW, Earls F. Neighborhoods and violent crime: A multilevel study of collective efficacy. Science 1997;277:918–24.
[10] Wallace D, Chamberlain AW, Fahmy C. Changes in neighborhood social control and Disorder and their relationship to Exercise behavior. Environ Behav 2019;51:717–48.
[11] McLean Hilker L, Jacobson J, Modi A. The realities of adolescent girls and young women in Kinshasa: Research about girls, by girls. London, England: UK AID and Social Development Direct; 2016.
[12] Serrano-Delgado CY, Reinoso-Carrasco JC, Rodríguez-Sánchez DA, et al. Descriptive study of the bio – psycho - social characteristics of adolescents in Cuenca, Ecuador. 2018 Arch Med (Manizales) 2019;19:1–20.
[13] Crouter AC, McHale SM, Bartko WT. Gender as an Organizing Feature in parent-child relationships. J Social Issues 1993;49:161–74.
[14] Serbin LA, Powlishta KK, Gulko J. The development of sex typing in middle childhood. Monogr Soc Res Child Dev 1993;58:1–99.
[15] Khudyakova T, Gridyaeva L, Klepach Y. Specific features of gender identity formation in children from single-parent and nuclear families in Ontogenesis. Procedia-Social Behav Sci 2016;233:393–6.
[16] Chen IJ, Zhang H, Wei B, Guo Z. The model of children's social adjustment under the gender roles absence in single-parent families. Int J Psychol 2018;54:316–24.
[17] Hook G. Contesting family-based violence: Sole parenting possibilities and alternatives. J Fam Stud 2017;26:67–76.
[18] Harper GW, Motley DN, Timmons Tyler A, et al. "You've Gotta be careful": Familial Messages Regarding sexual behavior and sexual relationships

among African American adolescents. Int J Environ Res Public Health 2019; 16:1146.
[19] Paredes E, Hernandez E, Herrera A, Tonyan H. Putting the "family" in family child care: The alignment between familismo (familism) and family child care providers' descriptions of their work. Early Child Res Q 2020;52:74–85.
[20] Mmari K, Moreau C, Gibb S, et al. "Yeah I've grown; I can't go out anymore": Perceived risks for girls and boys entering adolescence. Cult Health Sex 2018;20:787–98.
[21] Evertsson M. The reproduction of gender: Housework and attitudes towards gender equality in the home among Swedish boys and girls. Br J Sociol 2006;57:415–36. PMID: 16939594.
[22] Ampofo AA. "When men speak women listen": Gender socialisation and young adolescents' attitudes to sexual and reproductive issues. Afr J Reprod Health 2001;5:196–212. PMID: 12471941.
[23] Lundgren R, Beckman M, Chaurasiya SP, et al. Whose turn to do the dishes? Transforming gender attitudes and behaviours among very young adolescents in Nepal. Gend Dev 2013;21:127–45.
[24] Roche KM, Ahmed S, Blum RW. Enduring consequences of parenting for risk behaviors from adolescence into early adulthood. Socl Sci Med 2008; 66:2023–34.
[25] Gardner M, Steinberg L. Peer influence on risk taking, risk preference, and risky decision making in adolescence and adulthood: An experimental study. Dev Psychol 2005;41:625–35.
[26] Spear L. The behavioral Neuroscience of adolescence. New York: WW Norton; 2010.
[27] Blum RW, Resnick MD, Nelson R, St Germaine A. Family and peer issues among adolescents with spina bifida and cerebral palsy. Pediatrics 1991; 88:280–5.
[28] Barber BK, Stolz HE, Olsen JA. Parental support, psychological control, and behavioral control: Assessing relevance across time, culture, and method. Monogr Soc Res Child Dev 2005;70:1–137.
[29] UNESCO. Global education monitoring report 2019: Gender report: Building bridges for gender equality. Paris, France: UNESCO; 2019.
[30] Favara M, Chang G, Sánchez A. No longer children: What do young lives children do when they grow up? Transitions to post-secondary education and the labour market, Research Report. Oxford: Young Lives; 2018.
[31] Understanding Children's Work (UCW). Child labour: Trends, Challenges and Policy responses. Joining forces against Child labour. UCW Working Paper. Geneva: ILO; 2010.
[32] Mmari K, Lantos H, Blum R, et al. A global study on the influence of neighborhood contextual factors on adolescent health. J Adolesc Health 2014;55:S13–20.
[33] John NA, Stoebenau K, Ritter S, et al. Gender socialization during adolescence in low- and middle-income countries: Conceptualization, influences and outcomes. Innocenti Discussion Paper 2017-01. Florence: UNICEF Office of Research – Innocenti; 2017.
[34] Poushter J, Caldwell B, Chwe H. Social media Use Continues to Rise in developing countries but Plateaus across developed ones. Washington, DC: Pew Research Centre; 2018.
[35] Braun-Courville DK, Rojas M. Exposure to sexually explicit Web sites and adolescent sexual attitudes and behaviors. J Adolesc Health 2009;45:156–62.
[36] Hald GM, Mulya TW. Pornography consumption and non-marital sexual behaviour in a sample of young Indonesian university students. Cult Health Sex 2013;15:981–96.
[37] Sommer M, Mmari K. Addressing structural and environmental factors for adolescent sexual and reproductive health in low- and middle-income countries. Am J Public Health 2015;105:1973–81.