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Descriptive Finding

Gendered adolescent time use in Japan, Korea, Finland, and the United Kingdom across three decades

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Contents

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Descriptive Finding

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Abstract

BACKGROUND
Little is known about gendered adolescent time allocation across East Asian and Western contexts across time. East Asian societies have distinct Confucian-based parenting practices and time use. Examining these contexts helps us understand factors contributing to adult gender inequality and the levels of universalisation or divergence in time patterns.

METHODS
Using harmonised time diaries, we examine the gendered differences in time spent on sleep/personal care, education, TV/radio, general leisure, sports/exercise, and domestic work in South Korea, Japan, the United Kingdom, and Finland across three decades (1985–1990, 1991–2000, 2001–2010).

RESULTS
There are minimal gender gaps in sleep/personal care and education. Globally, girls spend more time on domestic work, and there is a rise in general leisure across decades, but gender gaps have not narrowed across time. Gender gaps in East Asia are most pronounced in sports/exercise and leisure, but gender gaps in domestic work are larger in Western societies. Over time, the gender gaps in East Asia remain stable, showing slower progress than in Western contexts.

CONCLUSIONS
Across contexts, gender gaps are smallest in 'essential' activities, but there are distinct gender gaps in East Asian and Western contexts. The persistent gender gaps in East Asia across time reflect persistent adult gender inequality, but we find that gender gaps are not necessarily smaller in more gender-equal societies.

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CONTRIBUTION

We contribute findings about adolescents' time use in East Asian and Western contexts, which is rarely studied due to data limitations. We also extend previous work by using contexts over three decades.

1. Introduction

Demographic research has examined gender gaps and time-use inequalities with a predominant focus on working-age and older populations, driven by concerns about declining fertility rates, work–life balance, and ageing demographics (Goldscheider, Bernhardt, and Lappegård 2015; Kan, Sullivan, and Gershuny 2011). However, little is known about adolescents' gendered time use, despite its influence on adult time-use patterns and future economic outcomes (Ojala, Kan, and Oinas 2021). Understanding adolescent behaviours enables demographers to identify early life cycle factors contributing to gender inequality, examine their effect on transitions to adulthood, and assess their long-term implications for population change and behaviour.

Previous studies on adolescents' time use have largely been limited to a recent and relatively short period, e.g., 2003–2015 (Gracia et al. 2021; Román and Gracia 2022) and have focused on Western countries due to data limitations. These studies reveal a gendered pattern in time use: girls are more likely to engage in domestic work (Ahn and Yoo 2022; Gracia et al. 2021; Rees 2017; Román and Gracia 2022), non-screen leisure activities such as artistic or social pastimes (Felez-Nobrega et al. 2020), and personal care (Román and Gracia 2022), while boys tend to spend more time playing computer games and being physically active (Ahn and Yoo 2022; Rees 2017; Román and Gracia 2022; Felez-Nobrega et al. 2020).

This study makes a significant contribution to the research agenda by extending the analysis to examine gendered patterns of adolescent time use across both East Asian and Western contexts over three decades. Using harmonised time diary data for 10–17 year olds, we investigate (1) gendered patterns of adolescent time use, (2) how these patterns vary in East Asian (Japan and South Korea, hereafter Korea) and Western countries (the United Kingdom and Finland), and (3) how gendered time-use patterns have changed across three decades (1985–1990, 1991–2000, 2001–2010).

2. Macro-level contexts for gendered time allocations

The Global Gender Gap Index (World Economic Forum 2010) ranks Finland as the most gender-equal country (0.83), followed by the United Kingdom (0.75), Japan (0.65), and Korea (0.63). Gender equality at the macro level may influence adolescents' time use through the diffusion of gender-typical norms; e.g., media portrayal of gender roles. The media often depicts girls and women with idealised body images and in traditional roles, which are associated with adolescents' attitudes to conventional gender stereotypes (Ward and Grower 2020). These stereotypes may be more pronounced in Japan and Korea media where, despite increased representation of female characters, girls and women are frequently portrayed as young, traditional homemakers, and dependent (Paek, Nelson, and Vilela 2010; Yamamoto and Ran 2014). We expect girls to spend more time on domestic work and personal care in East Asia than in Western societies.

There have been improvements in gender equality over time in all four countries studied. Between 1985 and 2010, female labour force participation rose from 49% to 56% in the UK, remained steady at 56% in Finland, and increased from approximately 41% to 50% in both Korea and Japan (World Bank 2025). Notably, in Korea fertility rates declined from 1.9 in 1985 to 0.99 in 2010 – well below the OECD average of 1.5 – due to the rising cost of childbearing, negative perceptions of marriage and parenthood, and persistent inequality in the division of housework (Kan and Hertog 2017; Yoo and Sobotka 2018). While improved gender equality may help reduce gender gaps in daily activities over time, an increase in female labour force participation without corresponding changes in men's contribution to housework may lead adolescents to take on more domestic chores or caregiving burdens, which are more likely to fall on girls (Ahn and Yoo 2022; Gracia et al. 2022; Rees 2017; Román and Gracia 2022). Since gender convergence in adults' time use in Korea and Japan has been slower or stagnant compared to in the United Kingdom (Kan et al. 2022), we expect the adolescent gender gap to narrow less in East Asia.

However, adolescent gender gaps may not align with broader societal gender equality (Rees 2017) and adolescents express gender identities through daily activities, particularly in societies that afford them greater autonomy in their everyday lives (Gracia et al. 2022). Meanwhile, cultures in East Asia are influenced by Confucian values, which emphasise hierarchical social structures and prioritise education, likely resulting in less autonomy and variation in adolescents' time use. If this is the case, we expect 'unique' gender gaps in adolescent time use in all countries, and if there are East Asian gender gaps they will persist across time due to a lack of variation in activities.

Technological advances may contribute to adolescents' increased engagement in leisure activities, such as browsing the internet or playing video games. Adolescents born in the 2000s are likely to have grown up with digital technologies and be digital natives,

unlike previous cohorts. Adolescents have become more sedentary since the turn of the 21st century, largely due to increased screen time (Cha and Yoo 2024; Román and Gracia 2022). As this trend is global, we expect to see a rise in screen time across all countries, with the gender divide diminishing over time.

3. Micro-level processes for gendered time allocations

Parenting styles may play a major role at the micro-level, with children reproducing the gendered behaviours of their parents (Goffman 1977; Kågesten et al. 2016; West and Zimmerman 1987). East Asian parenting is grounded in Confucian values, emphasising filial duty and education, whereas parenting in European-heritage societies promotes individual autonomy and respect for privacy (Chao 1994; Huang and Gove 2015). Consequently, East Asian parents may prioritise their children's academic achievement, while Western parents may place greater value on leisure. The 2018 PISA scores show that Korea and Japan outperformed the United Kingdom and Finland in maths and science, with Korea also having the smallest gender gap (OECD 2019). Korean adolescents study significantly more than adolescents in Western societies, often at the expense of leisure (Larson and Verma 1999) and sleep (Garcia-Roman, Garcia, and Zerbini 2024; Olds et al. 2010) and driven by cultural expectations surrounding homework and bedtime routines, and highly competitive education systems (Hertog and Zhou 2021). Therefore, we expect adolescents in East Asia to spend more time on education and to have smaller gender gaps than in Western countries.

Children may also reflect parents' behaviour through gender-role orientation, where children use the same-sex parent as the focal model; e.g., daughters imitating mothers doing domestic chores (Acock and Bengston 1978; Bussey and Bandura 1999). If children's gender gap mirrors the adult gender gap, we expect larger gender gaps in East Asian societies and the smallest in Finland, and that these gaps narrow over time due to improved gender equality, particularly in Western societies.

While boys tend to engage in more physical activity than girls (Mullan 2019), physical activity is lower in Asian societies than in Western societies (Ramírez Varela et al. 2021). In Korea in 2020, 94.1% of adolescents had 'insufficient physical activity', due to factors like the emphasis on education, limited safety and access to public spaces, and the absence of a national policy, unlike Japan's 2000 health promotion plan (Seo, Oh, and Yang 2022). Hence, boys are likely more active than girls in all countries, but Korean adolescents will have the lowest levels of physical activity.

4. Data and methods

4.1 Data and analytic samples

We use time-diary data from Japan (1991, 1996, 2001, 2006, 2011, 2016) and Korea (1999, 2004, 2009, 2014, 2019), harmonised with the Multinational Time Use Study (MTUS) (Fisher et al. 2022). We used data from the Japan Survey of Time Use and Leisure Activities, and the Korean Time Use Survey (http://kostat.go.kr/portal/eng/index.action). All data is restricted and can be accessed by applying through the respective statistical offices of each country. The harmonised syntax is available at https://www.gentime-project.org/. Time diaries from the United Kingdom (1987, 2000, 2015) and Finland (1987, 1999, 2009, 2020) were obtained from the MTUS. We selected these four countries because they offer comparable data spanning three decades and represent both East Asian and Western cultural contexts. We use diaries from adolescents aged 10 to 17 living in households with at least one adult. They filled in their activities on the sampled diary day in 10-minute or 15-minute slots. We chose age 10 as children under 10 are reliant on their parents, and cap the age at 17 as those aged 18 may have moved out of the home. The total sample size is 293,199 adolescent diary-year entries.

4.2 Key measures and method of analysis

Dependent variables: We examine minutes per day spent on six types of activities: (1) Sleep/personal care (e.g., sleep, naps, meals, self-care), (2) Educational activities (e.g., schooling, homework), (3) TV/radio, (4) General leisure activities (e.g., leisure, leisure outside the home such as watching movies or sports, reading, web and computer games) (5) Sports and exercise, (6) Domestic work (e.g., cleaning, food preparation, caring for the elderly and children), and all else as 'Other'.[3]

Independent variables: Adolescents' gender: *boy* (= 0) and *girl* (= 1). The country variables are Japan (JP), South Korea (KR), United Kingdom (UK), and Finland (FI).

Covariate: All models included controls for the adolescent, household, and survey characteristics. *Age* consists of ages 10–17. *Household size* is a continuous measure of all household members from 2 to 13. We control for whether the diary was collected on a *weekday* (= 1) or a *weekend* (= 0) and the *survey year* (ranging from 2000 to 2021). Since the countries were surveyed in different years, we group the survey years into three 'decades': 1985–1999, 2000–2009, and 2010–2020. Lastly, we control for *the highest level of education in the adolescent's household* which is classified in three levels:

[3] See supplementary material for a detailed breakdown of these activities.

1 = less than higher secondary, 2 = higher secondary, and 3 = above higher secondary education.

Across the four countries, the mean age is 13–14 years; household size averages 2–3 people, indicating most households have 1 child; and most households have above secondary education as their highest education level. The sample is weighted so that the ratio of weekday diaries to weekend diaries is 5:2 for each country-year.[4]

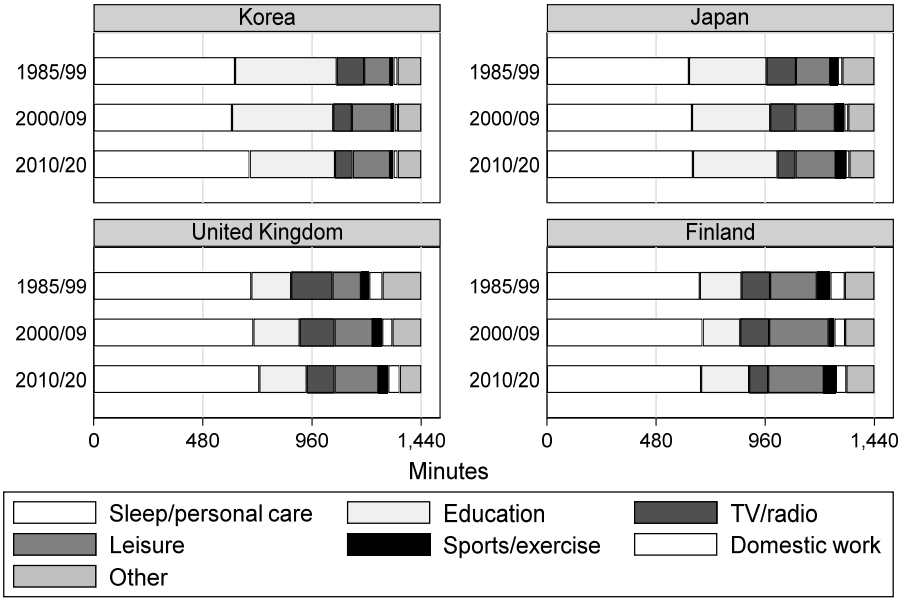
5. Patterns in pooled time use across societies and decades

Figure 1 shows how an average adolescent spends their time daily on the six activities (and 'other') in minutes. The categories in the bar charts read from left to right, by row. East Asian adolescents spend approximately half an hour less on sleep and personal care and double the amount of time on education-related activities than their Western counterparts (about 6–7 hours compared to 3–4 hours), and this East–West divide persists across the three decades.

Adolescents in the United Kingdom and Finland spend more time on TV/radio and general leisure than in Korea and Japan. Time spent on TV/radio has decreased over time but general leisure has risen across the decades, driven by computer/internet use in Korea, the United Kingdom, and Finland.[5] While Korea has the lowest levels of sport/exercise, the levels have remained the same across the decades. Domestic work is a small proportion of the day across all countries: about an hour on a weekend in the United Kingdom and Finland and 20–30 minutes in Korea and Japan.

[4] All estimates include a day weight for each country-year. The day weights are calculated by weighting 5 weekdays and 2 weekends, divided by the total number of respective weekend or weekday diary records in each country year; i.e., the ratio of weekdays to weekends equals 5:2 for each country/year in the weighted sample.
[5] See Table S2 in supplementary material

Figure 1: Weighted minutes per day on daily activities, averaged over weekday and weekend

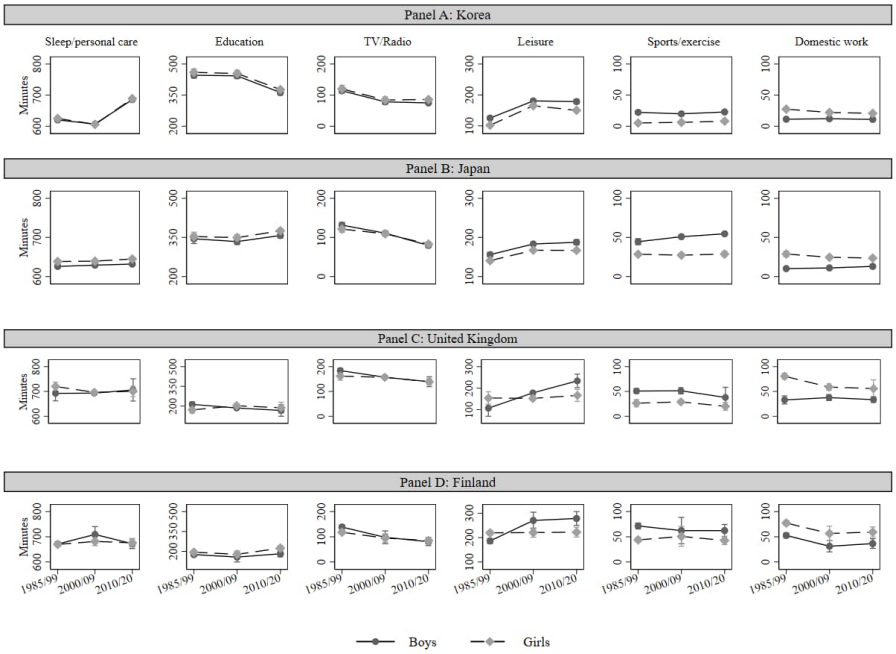


6. Gender gaps across countries and decades

We conduct weighted ordinary least squares models to examine the gender gaps of these activities for each society across the decades. Figure 2 plots the marginal predicted average minutes (y-axis) spent on each activity (columns) across countries (row) by gender (points) and decade (x-axis).

After controlling for the household size, the highest educational attainment and other characteristics, there are universally small or negligible gender gaps in major 'essential' activities (such as educational activities and sleep/personal care), as well as time spent watching TV or listening to radio.

Figure 2: Marginal effects of gendered activities across time and decades, by society



Note: See Table S3 in the supplementary material for test of statistical significance of the gender and decade interaction.

As shown in Figure 1, there were sharp increases in general leisure time in the United Kingdom and Finland compared to Korea and Japan. In all countries, the rise was driven primarily by boys, although notable gender gaps are evident in 2010–2020 in Korea, Japan and Finland, and in 2000–2009 in the United Kingdom. This trend is likely associated with computer and internet use, which accounted for around half of general leisure time in 2010–2020 (see Table S2 of supplementary material). Hence, concerns about the growth of sedentary leisure activities in recent decades are likely linked to boys' increased time spent on computer and internet use, although time spent on TV/radio has declined. While this confirms our hypothesis of a global rise in screen time, the gender divide in this activity does not appear to diminish over time. However, this conclusion does not extend to Japan.

Boys spent significantly more time on sports and exercise than girls in all countries in 1985–1999. By 2010–2020, these gaps have narrowed in the United Kingdom and

Finland but persisted in Korea and Japan. Korean girls spent very little time on sports and exercise – only 5–8 minutes per day – compared to boys, who averaged around 20 minutes.

Although the overall prevalence of domestic work is low (Figure 1), girls consistently spend more time on it than boys across all countries. Except for Finland in 2000–2009 and the United Kingdom in 2010–2020, gender gaps in domestic work are evident across decades in all countries. In this study, gender gaps in domestic work are considerably larger in Western countries than in East Asian countries. Although overall levels of domestic work are relatively low in East Asia, the burden tends to fall disproportionally on girls, even as both genders devote substantial time to education. In Korea and Japan in 2010–2020, for example, boys spent approximately 10 minutes per day on domestic work, compared to 20 minutes for girls.

7. Discussion and conclusions

Our study provides robust evidence of minimal-to-no gender gaps in 'essential' activities, in line with Román and Gracia (2022). We only find minor gender differences in time spent on TV/radio. Crucially, despite the considerable amount of time spent on education, small gender gaps in educational activities persist in East Asia. As hypothesised, we find that girls undertake more domestic work than boys across all countries and decades, with the exceptions of Finland in 2000–2009 and the United Kingdom in 2010–2020.

Our findings reveal distinct gendered time-use patterns in East Asian and Western countries, in line with our expectations. The most pronounced difference in gender gap between East Asia and Western counterparts is in sports and exercise. Korean adolescents spend the least amount of time on physical activity, reflecting wider public health concerns (Seo, Oh, and Yang 2022). Gender disparities in general leisure are also greater in East Asia than in Western countries in 2010–2020. Gender gaps in domestic work are larger in the United Kingdom and Finland than in Korea and Japan, suggesting that more gender-equal countries such as Finland do not necessarily exhibit smaller gaps. Despite the small proportion of time allocated to domestic work in East Asia, this burden disproportionally falls on girls, likely reflecting the influence of gender socialisation and portrayals of traditional gender roles.

Our findings reveal both persistence and changes in gendered time-use patterns. Over time, gender gaps in Korea and Japan have remained largely stable, with any progress occurring more slowly than in Western contexts. Physical activity levels in Korea were particularly low and have remained so, suggesting potential structural barriers to adolescent exercise. By contrast, gender gaps in sports and exercise have narrowed in the United Kingdom and Finland, and by 2010–2020, gender differences in

general leisure in the United Kingdom had become minimal. As hypothesised, these trends broadly align with patterns observed among adults, where gender gaps in time use remain wider and have been closing more slowly in East Asian countries than in Western ones (Kan et al. 2022).

The increase in general leisure over the three decades has been driven by greater computer and internet use, particularly in 2010–2020, in all countries except for Japan, where we have limited information. However, this appears to offset the decline in TV and radio consumption since 1985–1999, indicating shifts in media consumption behaviour. Notably, only in the United Kingdom was the rise in general leisure accompanied by a decline in sports and exercise, resulting in an overall increase in sedentary behaviour (Mullan 2019). This aligns with our hypothesis that global trends in screen time are increasing, but we find no evidence that gender gaps in screen time have narrowed over time.

This research is limited by variation in the survey years across countries and the categorisation of data into 10-year bands, which restricts year-specific analysis. Cross-national comparisons are complicated by differing interpretations of activities and inconsistency in survey methodology; e.g., Japan's omission of computer and internet use in the coding of data. Future research should investigate the underlying factors contributing to these gender gaps during adolescence and examine their long-term implications for gender inequality in adulthood.

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