

Teenagers Lifestyles at Public and Private Schools: Screen Time and Physical Activity

Estilos de vida de los adolescentes en las escuelas públicas y privadas: tiempo de pantalla y actividad física

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Abstract: This study aims to compare lifestyles (LS) of students at private and public schools. All schools are from Lisbon's region (Lisbon). Five lifestyles profiles (LSP) were recognized and interpreted based on physical activity (PA) and screen time (ST). The methodology and the instruments used were adapted from the International Health Behaviour in School-aged Children (HBSC) study conducted under the auspices of the World Health Organization (WHO). Overall, the sample consists of N=2906 students of both genders averagely aged 13.6 years (SD=1.8). The results showed that in both public and private school the access and use of technological equipment's is being democratized, but that is not true with PA practice; students of private schools are more disciplined in PA and in ST consume.

Keywords: Lifestyles Profiles, screen time, sedentary lifestyle, physical activity, public schools, private schools.

Resumen: Este estudio tiene como objetivo comparar el estilo de vida de los estudiantes de las escuelas públicas y privadas de la región de Lisboa. Cinco perfiles de estilo de vida fueron reconocidos e interpretados teniendo en cuenta la actividad física y el tiempo de pantalla. La metodología y los instrumentos utilizados en este estudio son el resultado de una adaptación del Internacional Health Behaviour in School-aged Children en niños en edad escolar realizado bajo los auspicios de la Organización Mundial de la Salud. El estudio incluye N = 2906 estudiantes de ambos sexos, con una media de 13,6 años (SD = 1,8). Los resultados mostraron que en las escuelas públicas y privadas, hay una democratización del acceso y uso de la tecnología, pero no en la actividad física; estudiantes de colegios privados son más disciplinados en la práctica de la actividad física y el tiempo de pantalla.

Palabras clave: Estilos de vida, perfiles de tiempo de pantalla, estilo de vida sedentaria, actividad física, escuelas públicas, escuelas privadas.

Introduction

In the latest generations, there has been a rise in physical inactivity, an increased sedentary behavior (Amusa et al, 2012; WHO, 2012) as well as the adoption of a set of incorrect food habits (Juan et al., 2009), which have led to a range of health problems (heart disease, type 2 mellitus diabetes, inadequate mental condition, etc.) and to the rise in obesity which clearly stands out (Hallal et al. 2006; WHO, 2006). PA is part of the solution in all cases referred (Riskin, 2001). In Portugal, the Portuguese Technological Plan, launched in 2007, promoted the availability of mobile devices and broadband connections for free or at very low prices (Technological Plan for Education, n/d). As a direct or indirect result, the Portuguese youth have led the European statistics in possession of laptop computers and internet connection in the bedroom (Matos, 2008; Bridge, 2011). This situation was not followed by any assessment of its influence on lifestyle in general neither of its particular influence on PA. On one hand, the literature presents a set of inferences and associations concerning the practice of PA by Teenagers, highlighting the following: males are more active (Biddle et al, 2004; Nader et al, 2008; Pearson et al., 2009); PA decreases with age (Belanger et al, 2009; Brodersen et al, 2007); there is a direct relationship between PA as a child and, later on, that of the adult (Ministerio de Sanidad y Consumo, 2007; Telama, 2009); body image is very important for young people, (Matos et al., 2000), there is more life satisfaction among the most active (Moreno et al., 2008; Piéron, 2002) the perception of competence and weight control are seen as the major motivating factors (McCabe & Ricciardelli, 2004); PA is very important for sleep quality (Atkinson & Davenne, 2007; Wong et al, 2013), screen time consumption is associated with lower PA (Olds et al, 2012; Sandercock et al, 2012); teenagers higher socio-economic status is associated with more PA (Camacho, 2011; White & McTeer, 2012), parents have a strong influence on their children's PA habits (Edwardson & Gorely, 2010; Jago et al, 2011; Matos & Diniz, 2005), but as children get older peers' influence overcomes the parents' (Camacho, 2011; Fitzgerald et al, 2012); the presence of parks and the freedom to leave the house influences the PA practice (Schoeppe et al, 2013); the neighborhood's social cohesion influences PA too (Carroll-Scott et al, 2013; Utter et al, 2011). On the other hand, the literature states that: young people very often organize their leisure around technological consumption; the amount of screen

time is reaching extremely high levels (Common Sense Media 2011; Rideout et al, 2010; Salmon et al, 2011), particularly the use of screen time on the Internet (Livingstone et al. 2011; Lenhart et al, 2010; Withers & Sheldon, 2008); *multitasking* has also increased greatly (Rideout et al., 2010); overweight is often associated with large consumption of screen time (Arango et al (in press); Sisson et al, 2010; Sedentary Behaviour and Obesity Expert Working Group, 2010); watching TV is still the most prevalent sedentary behavior among teenagers (Pardee et al., 2007); screen time consumption has health consequences, including a reduction in life expectancy which has already been predicted (Olshansky et al., 2005); screen time tends to increase as one gets older (Gebremariam et al, 2012; WHO, 2009); the percentage of screen time components may gradually assume different types of relevance; screen time consumption is higher in males (Granich et al, 2011; WHO, 2009); the lower the parents' qualifications and the screen time control the greater screen time consumption (Sharif & Sargent, 2006); the existence of rules limits consumption (Granich et al, 2011; Verloigne et al, 2012); and the absence of screens in the bedroom is related with lower ST consumption (Ramirez et al 2011.); more consumption is connected to poorer academic performance (Christakis, & Zimmerman, 2007; Sharif & Sargent, 2006) and to less personal satisfaction (Rideout et al., 2010). In fact, there seems to be a great lack of information/ or a significant ignorance of the recommendations and rules concerning technological consumption. Many aspects of the usual lifestyle have remained, some have evolved gradually and others have evolved considerably ... The combination of sedentary and active styles is complex and varied, with the possible coexistence of large amounts of sedentary behavior and a suitable amount of PA. However, in most cases, there is in fact an antagonistic effect caused by the power that sedentary behaviors have to limit PA.

In Portugal as in many other countries, there are public schools and private schools. The Portuguese private education is paid, an average sum slightly higher than the national minimum wage. The families who prefer the private education are a small percentage of the population, who is more qualified and has a medium-high income and who willingly gives up an almost free public service in search of better education quality. In the private sector, the population, rightly or wrongly, generally considers the quality of private schools higher than that of public schools (Davies, 2004). The literature suggests that parents send their children to private schools with the goal of improving their children's academic performance (Moe, 2000).

It is important to know more about young people's lifestyles, in order to contribute to the promotion of healthy lifestyles, without

focusing predominantly on the study of any particular sedentary behavior, but in a pluralistic perspective, with particular emphasis on the way these teenagers use the technological tools (PC, video games, TV, etc.) and practice PA. This study was always conducted with the purpose of comparing students from both public and private schools, that is, compare students who come from diverse social backgrounds.

Methodology

This study is an adaptation of the HBSC study conducted under the auspices of WHO. The participants were an extension of the Portuguese sample used in that study, but now including students from private schools in Lisbon. The international HBSC study has, as its fundamental objective, to enhance the understanding of health behaviours and wellbeing of adolescents in their social contexts, by collecting data that enables national and international comparisons (Roberts et al., 2007). This research is in its 8th edition and has the participation of 43 European and non-European countries (HBSC, 2009). In this study we chose to divide the sample into five profiles that are defined by the consumption of PA and ST, and study which variables characterize them.

Sample

The sample is made up by a convenience sample of private school students (N=1385) and public schools students (N=1521) Lisbon (Portugal), consisting of N=2906 students from the 6th to the 12th grades, aged averagely 13.61 years (SD=1.82), from 10 to 20 years (54% male and 54% female). 53 participants were removed because their responses were considered outliers.

Instrument

The HBSC survey instrument consists of an international questionnaire that is applied every 4 years (Currie, Samdal, & Boyce, 2001). In the private schools, this self-completion questionnaire was adapted for this research and named HBSC / WHO - Version B Private Education (VEPB). Before applying the VEPB a preliminary study was conducted to evaluate this version of the questionnaire and anthropometric measurements were carried out for all students in this study. The application of the questionnaires was undertaken during Physical Education classes. Students' participation was voluntary and anonymous.

Variables

Considering the literature review and the objectives of the study, we selected a set of variables: Personal (gender, age, school year), Sleep (sleep duration, difficulty in falling asleep), School (performance, motivation), Health (body mass index, satisfaction, self-image), Family (relationship, own room, parents and free time, financial situation, siblings), Symptoms (physical, psychological), Neighbourhood (social, physical), Computer (E&media communications, internet at home, number of computers, online games, new relationships and internet, school performance and internet, dissatisfaction without internet, communications and internet). It is important to emphasize that the variable «age» results from the variable «year and month of birth», the variable «sleep» results from the calculation of average weekly sleep, the variable «Body mass index» results from the calculation $Weight/Height^2$ with classification according to the parameters of Cole and colleagues (2000). Regarding the variables «social characteristics of the neighbourhood» and «physical characteristics of the neighbourhood», as well as the variables «psychological symptoms» and «physical symptoms», we determined the Cronbach's alpha to examine the internal consistency among the items comprising each factor, yielding acceptable values for the variable «social characteristics of the neighbourhood» (Private schools $\alpha=.654$ and public schools $\alpha=.612$) and «physical characteristics of the neighbourhood» (Private schools $\alpha=.663$ and public schools $\alpha=.608$), as well as for the variables «physical symptoms» (Private schools $\alpha=.639$ and public schools $\alpha=.654$) and for the variable

«psychological symptoms» (Private schools $\alpha=.611$ and public schools $\alpha=.674$) (Maroco, 2010).

The variables referred earlier were directly compared between public schools and private schools. These variables were also reorganized and compared in 5 LSP. More specifically «PA» was rearranged into 3 groups: «-active» (<3days/week), «±active» ([3,5]days/week) and «+active» (>5days/week), the variables «watch TV/DVD/video», «play computer games/console» and «use pc» were constructed through a weighted average between consumption during the week and consumption during the weekend, and «ST» resulting from the sum of the variable «watch TV/DVD/video» with «play computer games» and with «use pc», and rearrangement of the variable ST in 3 groups: «-screen» (<3h/day), «±screen» ([3, 5]h/day) and «+screen» (>5h/day). The LSP variable was constructed by joining the variable ST and the variable PA (days/week) organized in five profiles, more specifically: «classic» LSP1 (PA>5days/week and ST<3h/day), «moderate / mixed» LSP2 (±PA/±ST), «modern» LSP3 (PA>5days/week and ST>5h/day), «passive» LSP4 (PA<3days/week and ST<3h/day) and «risk» LSP5 (PA<3 days/week and ST>5h/ day).

Statistical Analysis

The sample was divided into two groups, students from private schools and students from public schools. The results were compared. More explicitly, the two groups were compared by means of the test statistics Chi Square, ANOVA, Multivariate Regression between the 2 groups and Multivariate regression among the 5 LSP. The N of 5 profiles and sub profiles, the average times of PA and ST by gender and average times of PA and ST by age were also calculated.

Results

From the results, due to its size, only the following tables are presented.

Discussion

Throughout this chapter only the variables that show statistical significance between schools will be discussed.

The relationship between PA and sedentary lifestyle is not straightforward in Lisbon public and private schools

In both school types, there are students in the five profiles, but the sequence is different in each school type. The «moderate / mixed» (±active/±screen) LSP2 and the «risk» (-active/+screen) LSP5 hold the top positions in both school types, whereas in public schools the LSP3 comes ahead of LSP1 which is in the last position. All profiles show significant variations between private and public schools, except the «passive (-active/-screen)» LSP4. These results are as reported by Marshall et al. (2004) and Marshall et al. (2002) who, in their meta-analysis, indicate that the relationship between sedentary behavior and health is difficult to explain involving only one element of inactivity. The same results are also in agreement with Burke et al. (2006) when they refer that it is unlikely to explain inactivity as a result of an isolated generic and sedentary behavior.

In both school types there are students in «modern» profile (+active/+screen)

In Lisbon private and public schools, there are students who are both very active and who simultaneously spend a lot of time in front of the screen. It happens more frequently in public schools and there are common characteristics of this profile in both school types, which meets Nelson et al. (2005) when they report that sedentary behaviors do not necessarily limit PA practice. Granich et al. (2010), Biddle et al. (2004), Owen et al. (2000) found that sedentary behaviors often coexist and sometimes even compete with the PA practice. Such connection is higher in public schools, where there are 10.3% of students in the «modern» (+screen/ +active) LSP3 than in private schools, where the

Table 1
LSP vs groups

Variables	2010						p ¹	
	Private Schools			State Schools				
	Lisbon VT (Portugal)			Lisbon VT (Portugal)				
	Objective 1		Classif	Objectiv 2		Classif		
	N	%		N	%			
LSP1 classic	+/-screen	127	9,50%	3	33	2,40%	5	0,000**
LSP2 mod/mixed	±active/±screen	909	68,30%	1	808	58,30%	1	0,000**
LSP3 modern	+active/+screen	83	6,20%	4	143	10,30%	3	0,000**
LSP4 passive	-active/-screen	76	5,70%	5	62	4,50%	4	0,141
LSP5 risk	-active/+screen	136	10,20%	2	338	24,40%	2	0,000**

* p < .05; ** p < .01; Chi Square Test

Table 2:
PA and ST in the 5 LSP

Variables	LSP1 classic			LSP2 moderate/mixed			LSP3 modern			LSP4 passive				
	+active/-screen			±active/±screen			+active/+screen			-active/-screen				
	Average	SD	%	Average	SD	%	Average	SD	%	Average	SD	%		
Physical Activity (days per week)	6,6	0,49		3,92	1,3		6,48	0,5		1,5	0,72		0,68	
WatchTV/DVD/video	0,85	0,47	48,60%	1,96	1,2	44,90%	3,03	1,41	40,20%	0,97	0,53	54,0%	1,54	40,0%
Private Schools														
Play computer games (or console)	0,36	0,38	20,60%	1,05	1,16	24,0%	1,95	1,39	25,9%	0,24	0,32	13,40%	1,76	24,50%
Use the computer	0,54	0,44	30,90%	1,36	1,17	31,10%	2,56	1,35	34,0%	0,58	0,38	32,40%	1,61	35,50%
Screen Time	1,75	0,73		4,33	2,5		7,53	2,41		1,79	0,68		2,5	
State Schools														
Physical Activity (days per week)	6,82	0,39		3,73	1,28		6,68	0,47		1,58	0,67		0,66	
WatchTV/DVD/video	1,02	0,54	56,9%	2,85	1,52	42,90%	3,39	1,66	37,9%	0,94	0,69	48,7%	1,67	42,1%
Play computer games (or console)	0,29	0,27	16,2%	1,65	1,63	24,8%	2,73	1,75	30,5%	0,37	0,49	19,1%	1,57	22,9%
Use the computer	0,48	0,38	26,8%	2,14	1,67	32,20%	2,82	1,64	31,5%	0,62	0,54	32,1%	1,73	34,8%
Screen Time	1,79	0,59		6,39	3,32		8,94	3,08		1,93	0,75		2,8	

number of students in the «modern» (+screen/ +active) LSP3 is 6.2%.

This profile is characterized at both schools by:

- Having more male students, specifically in private schools the «male» gender is 2.5 times more likely to be LSP3 (OR=0.4; 95% CI:[0.2-0.9], p<.05) and in public schools the «male» gender is 5 times more likely (OR=0.2; CI:[0.1-0.4], p<.05) to be LSP3.

- Being less frequent than «risk» (-active /+screen) LSP5, more particularly in private schools where the number of LSP3 students is almost twice more than that in public schools where there are nearly 2.5 times more «risk» (-active/+screen) LSP5 students than «modern» (+active/+screen) LSP3.

- Being the profile with more computers.

- Having students who feel happier with the physical characteristics of their neighborhood.

- Being the profile that communicates with more E&media friends on a daily basis.

- Being the profile that mostly drops school performance due to time spent on the internet.

- Having students who depend more time on the internet than in any other «+screen» profile, i.e., within the «+screen» profiles, the «modern» (+active /+screen) LSP3 is the «+active» one and students have greater need to use the internet in order to make their life less boring, empty or joyless.

- Being the profile who most often plays «computer games (or console).»

The ST has the potential to replace PA both in private schools and in public schools in Lisbon

If one takes into account the notion that it is possible to have sedentary behaviors and simultaneously be active both in private schools and in public schools in Lisbon, as it is stated above, then it can be inferred that ST has the potential to replace PA. Although there is a «modern» (+active/+screen) LSP3, i.e., it is possible to have sedentary behaviors and simultaneously be active, the ST may have implications for the PA. Notice that in both private and public schools, in the «+active» profiles (BP> 5 days / week) the average of PA practice is lower in «+screen» profile (ST>5h/day) than in «-screen» profile (ST<3h/

day), suggesting that a greater ST, even for the most active students, may decrease the PA time, more distinctly in public schools. That is also mentioned by Marshall et al. (2002) when they public that sedentary behaviors limit PA practice.

PA practice habits are insufficient both in public and in private schools

In the Lisbon public and private schools, PA is insufficient, in public schools it is 3.55 days/week (SD=1.95) and in private schools it is 3.95 days/week (SD=1.85), that is, in both school types PA, takes less than 4 days/week. Thus, the recommendations of 1h daily practice for students aged from 6 to 17 years or more, with moderate-to-vigorous intensity (USDHHS, 2008), are not complied with. Portugal has one of the lowest rates of frequency of PA practice if compared to 35 other countries, Matos & Diniz (2007). Moreover, the Euro Barometer (2010) states that Portugal is the European country where more youngsters refer never having practiced PA. In the total amount of samples from private and public schools, 80.4% of students are not «+active» (>5 days/week of PA) and 31% are actually «-active» (<3 days/week of PA), which is a better rate than that referred to in Matos & Equipa Aventura Social e Saude (2010), obtained within the Portuguese population (public schools) of whom 86% did not perform PA every day. However, this rate is even worse than that expressed by the results from the US Centers for Disease Control and Prevention (2010) who claim that only 68% of US young people did not perform the necessary PA according to the recommendations to promote health.

Lisbon public schools have more «+screen» students and private schools in Lisbon have more «-screen» students, the screen time is higher in public schools and the sequence in the screen time composition is the same in both school types

Lisbon public schools (66.7%) have more 31.8% «+screen» students (>5hours/day) than Lisbon private schools (34.9%) and private schools (33, 5%) have more 22% «-screen» students (<3h/day) than public schools (11.5%). The total samples of Lisbon private and public schools, show that there are 51% of students who are «+screen» (ST>5h/day) and 22.3% who are «-screen» (ST<3h/day). There is a great average

consumption of ST in both school types. What is observed is that in public schools, the average ST is 6:58h which is 2: 27h higher than that in private schools which have 4:31h ST. Both figures are lower than the 7:11h in Rideout et al. (2010). In both school types and in all profiles the predominant consumption is «watching TV/DVD/video» followed by «using the computer» and «playing computer games (or console)» which meets Rideout et al. (2010) who reported that watching TV remains the main technological consumption. More precisely, public schools consume (3: 04h) whereas private schools consume (2h). The result is that public schools consume 1:04h plus «watching TV/DVD/video» daily; both rates are lower than the 4:29h in the US of Rideout et al (2010). Regarding consumption of «playing computer games (or console)», the public schools' consume is (1: 53h) while the private schools' consume is (1:06h). So, public schools consume 0:47h plus, on a daily basis. Such rates are respectively above and below those mentioned by Rideout et al (2010) 1: 30h. In what concerns «using the computer», the public schools' consume is (2: 26h) while private schools' consume is (1:29h). Therefore, public schools consume daily 0:57h plus «using the computer». Both rates are superior to 1:12h, Rideout et al. (2010).

In both school types PA habits and screen time tend to stay

In Lisbon public and private schools, the *be active* behavior and proper screen consumption stay constant as one gets older. That is, the «healthy» (+active/-screen) LSP1 remains stable for life. It means that either in private schools or in public schools, more specifically the practice of PA, as well as the recommended proportions of screen consumption can become a habit, that once acquired, remains constant after the regular 13 years in public schools and it remains permanent in private schools. This suggests that PA and ST habits remain after acquired, and it is in accordance with Kirk (2005) on the importance of these habits being acquired at earlier ages, and with Kjonniksen et al. (2008) who report a higher probability of practicing PA in adulthood for those who did it when they were young. Telama (2009) also refers to the *tracking* of PA from childhood to adulthood. Other authors have also reported that sedentary behaviors in childhood are very harmful to one's health and they tend to be stable over time, remaining unchanged in adulthood (Biddle et al, 2009; Nelson et al., 2005; Sundblad et al, 2008).

Students from private schools in Lisbon follow the rules concerning screen time and PA more efficiently

Students from Lisbon private schools seem to follow the PA and ST recommendations more efficiently, that is, in private schools (9,54%) there are about 3 times more students in «classic» (+active/-screen) LSP1 than in Lisbon public schools (3%). On the other hand, in public schools (24%) the number of students in «risk» (-active/+screen) LSP5 is more than twice higher than that in private schools (10,2%). Moreover, it was found that students in public education are 2.2 times more likely to belong to (risk) «-active / +screen» LSP5 (OR=2.2; 95% CI:[1.5-3,1]; p<.01). Additionally, students in private education are 5 times more likely to belong to (healthy) «+active/-screen» LSP1 (OR=0.2; 95% CI:[0.1- 0.5], p<.01). In an international study (Pombeiro, 2015), the same private schools line up with the countries who have the highest financial level, the 39 countries belonging to the International HBSC study (Currie et al., 2012), who display lower ST consumption, specifically less consumption of « watch TV/DVD/video or playing computer games (or console)». There is possibly a greater concern with PA practice in private schools, as well as the existence of ST consumption rules that limit the consumption of ST (Granich et al, 2011; Verloigne et al, 2012).

In both school types, PA decreases up to the entry into adulthood

In Lisbon public and private schools, students reach the age of 17 with an average PA that is below what it used to be at the age of 11. and this reduction is greater in private schools (-1.25 days/week) than in public schools (-0.33 days/week). This result is consistent with what

was reported by Biddle et al. (2004), Kjonniksen et al. (2008) and WHO (2009). In what concerns gender matters, in public schools, there is a higher reduction of PA practice at the age of 17 in the female gender (-0.78 days/week) than in the male gender (-0.17 days/week), if compared to the age of 11. On the contrary, in private schools, there is a greater reduction of PA practice at the age of 17 in the male gender (-1.47 days/week) than in the female gender (-0.84 days/week), if compared to the age of 11. These results are in agreement with Calmeiro & Matos (2004) and Nelson et al. (2006) for public schools but not for private schools. On the other hand, the values of PA at the age of 17 are, on average, lower in the private schools (3.21 days/week) than in the public schools (3,61 days/week), and between genders, the values in the female one are greater in the private schools (3.17 days/week) than in the public schools (2.81 days/week), but lower in the male gender (4.12 days/week) in the public schools than in the private ones (3.24 days/week). In short, the PA practice decreases up to adulthood in Lisbon both public and private schools and this decrease is greater in private schools. Concerning gender, the decrease is higher in public schools for the female gender and in private schools the reduction is higher for the male one. The value of PA is even inferior in the private schools if compared to the public schools after the age of 17 in the male gender, although the average for PA at all ages is higher in private schools. These data are certainly not good indicators. Matos & Aventura Social e Saude (2004) and Kirk (2005) report associations between PA in childhood and its practice into adulthood.

The screen time increases until the early adulthood in both school types especially in public schools and differently between genders

In public and private schools, students reach the age of 17 with an ST average higher than what they used to have at the age of 11. Such ST increase is higher in public schools (+0:50h) than in private (+0:40h). Both cases are in agreement with the studies published by Biddle et al. (2009), Gebremariam et al. (2012), Olds et al. (2006) and Olds et al. (2009) who reported that ST increases with age. In what concerns gender, in both school types, there is a greater increase in ST consumption in the female gender, i.e., at the age of 17 the female gender has 0:55h plus ST in public schools and 0:52h plus ST in private schools, and the male gender 0:43h plus ST in public schools and 0:38h plus ST in private schools, if compared to the ST at the age of 11. In other words, ST consumption increases until adulthood in both public and private schools in Lisbon. Such increase is greater in public schools. These are worrying results according to Ministerio de Sanidad y Consumo (2007) where it is said that sedentary teens today are likely to be the inactive adults of the future.

There is greater PA in the male gender in both school types

In Lisbon private and public schools, when comparing genders, PA practice is higher in the male gender than in the female and this difference is bigger in public schools, with 1 day / week plus, than in private schools, with 0.98 days/week plus. Moreover, in both school types, the female gender is more likely to belong to «-active» profiles. Notice that in private schools the female gender is 4 times more likely to belong to LSP4 (OR=4.2; 95% CI:[1.8-9.8], p<.01) and is 2.6 times more likely to belong to LSP5 (OR=2.6; 95% CI:[1.4-5.0], p<.01). In public schools, the female gender is 21 times more likely to belong to LSP4 (OR=20.9, 95% CI:[1,2-359.4], p<.01) and is twice more likely to belong to the LSP5 (OR=2.0; 95% CI:[1.2-3.3], p<.05). That is, in both school types, what happens is what the authors Nader et al. (2008) and Troiano et al. (2008) stated when they referred that the PA practice is lower in the female gender.

In both schools, the male gender consumes more screen time, especially in public schools, largely due to increased consumption of playing computer games (or console)

The male gender consumes more ST than the female one in Lisbon public and private schools. This difference is higher in public schools, (+0:46h), than in private schools, (+0:34h), which meets what other

authors, such as Booth et al. (2006), Olds et al. (2009) and Salmon, et al. (2004). The male gender consumes as much «watch TV/DVD/video» as the female one in both public and private schools. The male gender consumes slightly more «using the computer» than the female one in the public schools, with 0: 01h plus. This result is according to the study HBSC 2006 (WHO, 2009), but in private schools the male gender consumes less 0: 10h. In what concerns the «computer games (or console)» the male gender consumes more than the female one in public and private schools. This difference is higher in public schools, (+1:06h), than in private schools (0:52h), which meets what Rideout et al. (2010) report when they refer that the male gender consumes more than the female one. To summarize, in both public and private schools, the male gender has more ST, largely as a result of higher consumption of «playing computer games (or console).»

The school performance should have different interventions according to the type of school

Academic achievement stands out of the exclusive results of Lisbon public and private schools presented above. In private schools, the «+active» profiles have the best academic performance. However, in the public schools, the «-screen» profiles have better academic performance. The private schools results are according to the study described in Active Healthy Kids Canada (2012), where the existence of an association between more PA and better school performance is referred. On the other hand, public schools are in line with Sharif & Sargent (2006) where an association between more ST and worse school performance is referred to. Thus, an intervention to improve school failure in private education should fight the «-active» behaviors and public education should fight the «+screen» behaviors.

Parents' deeper knowledge about their children's free time in Lisbon private schools

The results of the analysis of Lisbon public and private schools students' unique characteristics presented previously also show parental relationship with the children's free time. It is noticed that in private schools (54.7%) more parents know a lot about their children's free time than in public schools (51.7%). On the other hand, in private schools it is in «-screen» profiles where there are more parents who know a lot about their children's free time. The same doesn't happen in public schools, which may mean that there is concern and influence in order to make students become «-screen», which is in line with what Edwardson & Gorely (2010) report when they point out that parents have a strong influence on their children's PA and with what Sharif & Sargent (2006) report about lower ST during the week being associated with greater parental supervision. Most public schools researched in this study have «fragmented» timetables. If such situation is related with the fact that there is less parental knowledge about children's free time and that there is not any greater knowledge about the «-screen» profiles, one may draw the conclusion that parental knowledge about children's free time is not such an important concern and it may lead to increased screen consumption.

Between public and private schools the ratio of students who have access to the Internet is higher in Lisbon public schools

With regard to the Internet, it is emphasized that in Lisbon public schools:

- Students communicate more with E&media friends. There are 59.6% public school students who very often communicate with E&media friends, whereas in private schools the number is 54.4%.

- The internet impairs school performance more seriously. Notice that, in public schools, 13.9% of students often drop their school performance results due to time spent on the internet and in private schools the number is 2.5%. More specifically, students who rarely drop their school performance due to time spent on the Internet are more likely to belong to private schools (OR=0.4; 95% CI:[0.2-0.7], $p<.01$).

- Students play online more, in public schools 24.3% of the students

play online very often and 16.8% of the students in private schools do the same.

- Relationships are created over the Internet. It was found that, in public schools, 16.4% of students «often» create relationships on the Internet and in private schools the number is 4.1%. More specifically, students who «rarely» create «new relationships» on the Internet are more likely to belong to private schools (OR=0.3; 95% CI: [0.2-0.5], $p<.01$) or (OR=0.4; 95% CI: [0.2-0.6], $p<.01$).

- There is much greater dissatisfaction when the students don't have internet. Notice that, in public schools, 32.6% of students are «often» dissatisfied and 13.1% in private schools feel the same. More specifically, students who «rarely» feel unhappy when there's no Internet are more likely to belong to private schools (OR=0.4; 95% CI: [0.3-0.6], $p<.01$) and (OR=0.4; 95% CI:[0.3-0.6], $p<.01$).

- One communicates more often through the Internet. In public schools, 46.9% of the students often communicate over the Internet and in private schools the number is 24.5%. More specifically, students who «every day or more than once a day» communicate over the Internet are less likely (50%) to belong to private schools than to public schools (OR=0.5; 95% CI:[0.3-0.5]; $p<.01$).

- In both school types, further access to technology relates to more consumption. Notice that, in public and private schools, it is in the «+screen» profiles where there is greater amount of computers at home and it is where there are more students with access to the internet at home.

There is a democratization of the access to the IT and to technological consumption, but not to PA

In both school types, students are very well equipped in technological terms; in fact, there's a slightly greater amount of «having computer at home» in private education students (99.6%) if compared to the public schools students (98.6%), although there is a greater number of computers (two or more) in the private school students' home (90%) than in the public school students' (78.5%). As for the internet access, in private schools, with 98.9% access, there are more students with internet at home than in public schools with 95% access. However, both have very high rates of home Internet. In both school types the rates are higher than those found by Rideout et al. (2010) referring to the US rates in 2009 with 93% and 84% PC with internet. And the rates are still much higher than those described by Bingué & Sádaba (2008) in Argentina, Brazil, Chile, Colombia, Peru and Mexico who report the existence of 65% homes with PC and 46% with internet. Such massive use of the PC was not only a consequence of the technological evolution itself, but it was also enhanced by the Portuguese government policies (Technological Plan for Education, n/d) put into practice through the e.escolas programs, among other measures, which promoted the democratization of the portable PC and the Internet in Portugal. On the other hand, it turns out that both in public and in private schools in Lisbon the «+screen» profiles students are not in better financial terms. That is, there is a democratization of access to technology in both school types. With regard to the PA, it is emphasized that in both school types there are more students from families with higher financial incomes in the «+ active» profile. It is also verified, in both school types, that within the two «+screen» profiles there are high financial income students in «modern» (+active/+screen) LSP3, which means that high income students are in the «+active» profile. Private schools in Lisbon practice more PA than public schools, specifically private schools with 3.95 days/week, SD=1.85, have a PA practice average (60 minutes/day) which is 0.40 days/week higher than that of public schools with 3.55 days/week, SD=1.95. In short, the PA practice continues to be associated with higher financial income families, which is according to Walter et al. (2009) and White & McTeer (2012), but in what concerns ST there seems to have been a democratization that led to its massive use, which matches Common Sense Media (2011), Fletcher et al. (2013) and Hoyos & Jago (2010) when they refer the connection between higher ST and lower financial income.

Conclusions

One can summarily characterize Lisbon Private Schools, as being attended by a higher financial level population and as being associated with a better set of characteristics for their students. In both private and public schools, there is a democratization of access to technological tools and to technological consumption, but not to PA. It is common for the screen time to have the potential to replace PA. Students from private schools are more rules abiding regarding PA recommendations and even more rules abiding on the topic of screen time recommendations. In what concerns the relationship between PA and screen time, as well as the strategies to improve school performance, the targets should be different according to the school type. Are the issues that dictate success or failure at school in Lisbon (Portugal) more intrinsic of the population, or rather, are they matters of education and social habits ...?

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