THE IMPACT OF HOME COMPUTER USE ON ADOLESCENT'S ACTIVITIES AND DEVELOPMENT

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1. INTRODUCTION

In recent years, electronic games, home computers, and the Internet has assumed an important place in our lives. Although computers, initially were developed for adults, adolescents have fully embraced these technologies for their own social purposes and typically are the family experts on how to use electronic media and Social Networking Sites (SNSs). Adolescents and young adults initially dominated SNSs such as MySpace and Facebook, with parents often following their children in this youth-driven phenomenon. The preponderance of adolescents has access to and engages in the use of SNSs: Based on relatively recent data, although perhaps presently an underestimate, 73% use social networking sites (Lenhart, 2009; Lenhart, 2012; Lenhart, Ling, Campbell, & Purcell, 2010). Moreover, despite the terms of service of Facebook restricting its use to those age 13 or older, it is estimated that 7.5 million young children also have accounts ("That Facebook Friend," 2011). The sheer amount of time that adolescents and young adults spend using electronic media is perhaps the most revealing: on average, 11–18 year-olds spend over 11 hours per day exposed to electronic media (Kaiser Family Foundation, 2010). Late adolescents and emerging adults average approximately 30 minutes per day just on Facebook alone (Pempek, Yermolayeva & Calvert, 2009). Many adolescents begin and end their day by checking SNS posts. Furthermore, SNS use commonly disrupts adolescents' solitary activities as well as their ongoing face-to-face interactions. The presence of SNS use in many adolescents' lives is thus indisputable; however, the impact on adolescents' individual development and social lives is only starting to be understood.

Scientific study of adolescence has long targeted the development of one's identity and the formation of friendships and peer relationships as important topics of study (Institute of Medicine, 2010). Two of the key tasks of adolescence are "to stand out—to develop an identity and pursue autonomy and to fit into finding comfortable affiliations and gain acceptance from peers" (Brown, 2008). Although seemingly divergent goals, the interplay between the need for one's own personal identity and the need for close personal ties and strong group affiliations permeates all domains of adolescents' everyday lives (Crosnoe & Johnson, 2011), and clearly intersects with SNS use. The literature on SNSs and adolescents' quest to fit in examining whether SNS use extends and deepens adolescents' ongoing relationships or expands their contacts in new directions. Whereas childhood friendships are rooted in shared interests and activities, close friendships in adolescence involve trust, self-disclosure, and loyalty (Collins & Steinberg, 2006; Brown & Larson, 2009). SNSs potentially offer additional avenues for support and communication—crucial to the development of age-appropriate adolescent relationships; yet there are questions to be addressed about why adolescents might differentially benefit from SNSs.

SNSs offer adolescents new opportunities as well as new challenges to express to the world that one is. In one-on-one communications within SNSs (e.g., "Facebook messages"), adolescents can express their likes and dislikes as well as their world views and get immediate feedback. With SNSs, adolescents express their views and the recipients of this information include both known as well as unknown targets. Although there has been variability over time in the specific format of

SNS profiles, adolescents have the option of choosing what self-identifying information to provide. Thus, with the advent of these SNSs, most adolescents will widely share, to varying degrees of accuracy, honesty, and openness, information that previously would have been private or reserved for select individuals. Key questions include whether adolescents accurately portray their identities online, and whether the use of SNSs might impact adolescent identity development.

Straddling these two developmental tasks, adolescents also can join Internet "groups" reflecting aspects of their identity that they wish to explore or deepen. Thus, SNSs may simultaneously amplify dimensions of self-identify and extend group identities. Moreover, SNSs create more publicly prominent avenues for adolescents to commit to preferred activities, groups, and, in some cases, beliefs.

Social comparison is another dimension of SNSs that is highly relevant to adolescents. Invitations to social gatherings, such as a spontaneous party, and good news, such as a won football game or a college acceptance, can be shared and congratulated but also serve as a point of comparison for one's own accomplishments. Similarly, distressing or objectionable information—including unflattering and compromising pictures, untrue information, or unfortunate news, e.g., a car accident or an arrest—can spread throughout adolescents' social network and beyond in a nanosecond. Teens' tendencies to share information impulsively, coupled with the power of SNSs for rapidly and widely distributed communications, can have important ramifications for teens' personal and interpersonal worlds.

This chapter presents a review of the research on the impact of home computer use on the development of adolescents. Time use data are presented along with a discussion of factors such as age, gender, and ethnicity, which impact the time spent on computers as well as the activities engaged in. Research on the impact of computer use on academic development, social development and relationships, and perceptions of reality and violent behavior is reviewed. The special role of the Internet in the lives of adolescents is brought out using data from the HomeNet study.

Surveys of parents suggest that they buy home computers and subscribe to Internet access to provide educational opportunities for their children, and to prepare them for the ``information-age'' (Turow, 1999). Although they are increasingly concerned about the influence of the Web on their children and express disappointment over their children using the computer for activities such as playing games and browsing the Internet to download lyrics of popular songs and pictures of rock stars, they generally consider time wasted on the computer preferable to time wasted on TV, and even consider children without computers to be at a disadvantage (Kraut, Scherlis, Mukhopadhyay, Manning, & Kiesler, 1996).

While the research on whether computers are a positive influence in children's lives is mostly sketchy and ambiguous, some initial findings are beginning to emerge. This chapter starts with a discussion of the time spent by children on computers and the impact of such computer use on other activities such as television viewing. Then review the available research on the effects of computer use on children's academic skill development, social development and relationships, as well as perceptions of reality and violent behavior.

In examining the impact of computer use, primarily looked at two popular applications of the computer, including games and the Internet. Because games played on a computer are similar to games played on other platforms (e.g., stand-alone game sites such as Nintendo and Sega or handheld games, such as Gameboy), use the term computer games inclusively to refer to all kinds of interactive games regardless of platform. Even the distinction between games and the Internet is getting blurry as interactive games can be played on the Internet. With the expected convergence of different media in the near future, assessing the impact of computer technology on adolescent will only get more complex and challenging.

2. TIME SPENT ON COMPUTERS

Understanding the impact of computer use requires good estimates of both the time adolescent spend on computers, and the time taken away from

other activities. Time use data on children's use of computers has been gathered mostly through self-reports and reports from parents.

The way adolescents spend their time can strongly influence their health later in life. For youth to maintain a healthy future, they need plenty of sleep; good nutrition; regular exercise; and time to form relationships with family, friends, and caring adults. Additionally, the time adolescents spend in school and in after-school activities with peers and adults can advance healthy academic, emotional, social, and physical development. Adolescents also are influenced by their exposure to media and their increasing use of social media.

The detailed information in the American Time Use Survey, collected by the U.S. Bureau of Labor Statistics, provides a picture of a day in the life of a high school teen, comparing time on a typical school day and time on a weekend day during the school year.

- **Sleep.** Once adolescents reach high school, they ideally need nine to 10 hours of sleep for healthy development. On average, high school teens get an appropriate amount of sleep on weekend nights (an average of almost 11 hours), but they sleep considerably less on week nights (8.6 hours).
- **Education.** On average, high school teens spend almost seven hours each weekday (and 1.1 hours each day on the weekend) on educational activities. This includes attending classes, participating in extracurricular activities (excluding sports), and doing homework.
- **Media/communications.** Adolescents spend a substantial amount of time on media and communications activities. These include watching TV, playing video and computer games, surfing the Internet, listening to or playing music, and using cell phones to call or text friends and others. High school teens spend an average of 2.3 hours on these types of activities on a weekday and 4.3 hours per day on weekends.
- **Leisure.** Although adolescents are busy with school, they also spend a sizable amount of time in leisure activities, such as socializing, pursuing hobbies, reading and writing, and attending arts or sports events. High school teens spend 1.4 hours a day on leisure activities on an average weekday and 1.9 hours a day on weekends.
- **Sports**. Time spent actively playing sports can contribute to the teens' daily requirement for one hour or more of physical exercise.[1] High school teens spend an average of 0.7 hours a day (about 42 minutes) on sports on weekdays and 0.9 hours a day on weekends.

2.1 DIFFERENCES IN TIME SPENT BY HIGH SCHOOL MALES AND FEMALES

High school males and females spend about the same amount of time in class, doing homework, eating and drinking, and working. However, they do spend their time outside of these activities in different ways.

- **High school males.** On average, high school males spend about one more hour per day on media and communications activities than females on both weekdays (2.9 vs. 1.8 hours) and weekend days (4.8 vs. 3.8 hours). They also spend more time playing sports on both weekdays (0.9 vs. 0.5 hours) and weekend days (1.2 vs. 0.5 hours). On weekdays, high school males get an hour more of sleep than females (9.2 vs. 8.2 hours, on average).
- **High school females.** On an average weekday, high school females spend more time than boys on both leisure activities (1.7 vs. 1.1 hours) and religious activities (0.1 vs. 0.0 hours). High school females also spend more time on grooming on both weekdays and weekend days (1.1 vs. 0.7 hours, on average for both weekdays and weekend days).

- Time spent on educational activities

Activities	Weekdays (in hours)		Weekends (in hours)	
	Males	Females	Males	Females
Total	6.6	7.0	1.0	1.3
High school classes	5.5	5.6	0.0	0.1
Homework for	0.9	1.2	0.9	1.0

high school				
Extracurricular activities (excluding sports)	0.2	0.1	0.1	0.0
Other classes	0.0	0.0	0.0	0.1
Other educational activities	0.0	0.0	0.0	0.1

High school teens spend time on a variety of educational activities, which include attending classes, participating in extracurricular activities, and doing homework.

- During weekdays, most of their educational time is spent in high school classes (5.5 to 5.6 hours a day, on average).
- High school males and females spend roughly an hour per day on homework, on both weekdays and weekend days (0.9 to 1.2 hours per day).

2.2 TIME SPENT ON MEDIA/COMMUNICATIONS

Activities	Weekdays (in hours)		Weekends (in hours)	
	Males	Females	Males	Females
Total	2.9	1.8	4.8	3.8
Watching television or videos	1.8	1.3	3.2	2.8
Playing games or spending time on a computer*	0.8	0.3	1.3	0.7
Listening to or playing music (as primary activity)	0.1	0.1	0.2	0.1
Communications: phone, texting, email	0.1	0.1	0.1	0.2

Adolescents spend a substantial amount of time on media and communications activities, including watching TV, playing video and computer games, surfing the Internet, listening to or playing music, and using cell phones to call or text friends and others – many of these at the same time.

- While high school males spend more time on the computer than high school females, all adolescents spend most of their media/communications time watching TV and videos. On the average weekday, females watched 1.3 hours of TV and videos, and males watched 1.8 hours. On weekends, they both watch around 3 hours a day.

2.3 TIME SPENT ON LEISURE ACTIVITIES

Activities	Weekdays (in hours)		Weekends (in hours)	
	Males	Females	Males	Females
Total	1.1	1.7	1.8	2.1
Socializing and social events	0.8	0.8	1.2	1.3
Attending arts or sports events and exhibitions	0.1	0.4	0.4	0.2
Relaxing and thinking	0.1	0.2	0.1	0.3
Doing hobbies	0.1	0.0	0.0	0.1
Reading or writing (not homework)	0.1	0.1	0.0	0.1
Other leisure activities	0.0	0.2	0.1	0.1

High school teens spend a substantial amount of time in leisure activities, such as socializing, pursuing hobbies, reading and writing, and attending arts or sports events.

- On an average weekday, high school students spend 0.8 hours just socializing or at social events. High school females spend 0.4 hours attending arts or sports events, and 0.2 hours just relaxing and thinking (compared to 0.1 hours, each, among males).
- On an average weekend day, high school students spend 1.2 hours socializing and at social events. Females spend 0.3 hours relaxing and thinking (compared with 0.1 hours among males) and 0.2 hours attending arts or sports events (compared with 0.4 hours among males).

2.4WHO ARE HIGH SCHOOL STUDENTS SPENDING THEIR TIME WITH?

Activities	Weekdays (in hours)		Weekends (in hours)	
	Males	Females	Males	Females
Alone	3.5	2.7	3.5	3.0
Friends*	1.8	2.5	2.1	2.2
Family*	2.9	3.8	5.5	6.1
Customers, clients, coworkers	0.3	0.5	0.3	0.5
Any child care	0.5	0.8	0.8	1.3

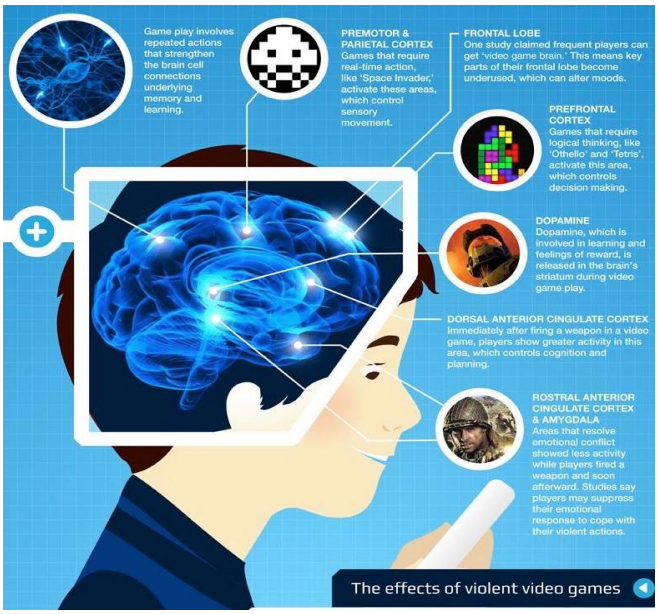
In addition to understanding how adolescents spend their time, it is important to understand who they spend time with. Time spent with family can be important for mental health and cognitive development, while spending time with

peers is important for healthy social and emotional development. Though spending too much time alone can be a warning sign of depression,[2] having some alone time can help teens relax and build independence. Data collected by the U.S. Bureau of Labor Statistics shows with whom high school students spend their time.

- **Time with family.** On average, both females and males spend more time with their families on weekend days than weekdays (an average of 2.6 more hours for males and 2.3 hours more for females). High school males and females spend a similar amount of time with family on weekend days (5.5 to 6.1 hours per day), but high school females spend more time with their families than males on weekdays (3.8 vs. 2.9 hours per day).
- **Time with friends.** Males and females spend similar amounts of time with friends (1.8 to 2.5 hours per day on weekdays and 2.1 to 2.2 hours per day on weekends).
- **Time alone.** High school males spend more time alone than females on weekdays (an average of 3.5 hours per day compared with 2.7 hours), but they spend a similar amount of time alone on weekend days (3.0 to 3.5 hours).

3. EFFECT OF VIDEO GAMES ON ADOLESCENTS' DEVELOPMENT

Research has shown that playing video games can be beneficial for a number of cognitive functions and may also contain social benefits. The first and foremost thing one discovers in a game is that *following directions* is of the utmost importance. In order to progress in games, one must first learn to follow the guidelines, restrictions and components of them. As the player confronts new challenges, he must use *problem-solving* to find solutions. This is true for educational games, mind games, and RPGs alike. The player cannot get through with what they already have or know and must find new combinations and incorporate old skills with new skills to overcome obstacles such as the level or quest. In relation to this, the player can also learn *strategy and anticipation*, *management of resources* (simulation games), *mapping*, *pattern recognition*, how to *judge the situation* and practice *reading* (with directions, dialogue, etc.) and *quantitative calculations* (through educational games, managing finances, buying and selling for profit, etc.



Gamers also get used to *multitasking*. As games become more intricate, players must juggle different objectives while keeping track of all the changing elements and connecting ideas. Games also induce *quick thinking*. According to cognitive scientist Daphne Bavelier of the University of Rochester, results of a study found that people who play video games become more attuned to their environment and able to keep visual tabs on friends in crowds, able to navigate better and better at everyday things like driving and reading small print. Playing games also "significantly reduced reaction times without sacrificing accuracy" beyond the context of the games and into making correct real-world decisions. Because of this effect on perceptual reaction times, even the U.S. military uses warfare simulation games in training and claims its benefits

Video games also increase *hand-eye coordination*, *fine motor skills* and *spatial reasoning*. For example, in shooter games, the player keeps track of their position, direction,

speed, aim, results and more. The brain processes all this information and then coordinates with the hands since all actions are done through the controller or keyboard. These skills can be applied to real world situations like surgical procedure (Florida Hospital

Finally, gaming is *stimulating*, a *learning experience* and a *social activity*. The reason why people find it so enjoyable is that games are usually the right degree of challenging and the player takes an active role (unlike watching television) so there is an incentive to achieve. Let's also not forget that many games, like "Rise of Nations" or "Age of Mythology" are educational and have a lot to offer in areas like science, politics, history and cultural studies and some games are practical, like pilot-training simulations. The gaming world is very popular. Thus, playing video games has become a social activity. In fact, nearly 60% of frequent gamers play with friends, 33% with siblings and 25% with a spouse or parents. Many games require cooperative play and logistics, comradeship and frequent interactions between team members.

A. WRAP-UP

Like so many other issues these days, the concept of video games is controversial. The line between a healthy amount of gaming and an excessive amount is easily blurred and crossed– especially when video games are as addicting as studies claim. As parents, it is prudent to find moderation in all things. Banning games entirely may be good for some households, but others (depending on the prominence of gaming within the environment) will find that it may socially isolate their children, take away a source of joy and possibly cognitive development. However, opening the door to the good, will also allow access to the bad including exposing the children's minds to the realm of violence, taking their free time away from doing other things, and putting them at risk for obesity**.** In the end, it is important that the parent monitors what kinds of games children are playing and being exposed to. Part of this job is to know the descriptors and the genres they represent. The Entertainment Software Rating Board has ratings that provide concerned parents information about the content of the games. Efficient use of these ratings can help parents to make more informed choices for their children.

4. HOME COMPUTER USE AND ACADEMIC PERFORMANCE

In this section, examine the impact of computer use on adolescent's performance in academic areas such as math, science, language arts, and writing. Teenagers in the HomeNet sample reported that the most common educational use of computers was simple word processing for school assignments. In addition, students used links to the web to find information in various class reports. For example, one student found information on Pittsburgh's role in the Underground Railroad for a Black history month assignment. While students in clubs (e.g., the school newspaper) sometimes used Internet communication to coordinate meetings or to distribute shared materials (e.g., assignments or stories), this was far less common than using the computer for writing, printing, and research. Stand-alone educational software programs aimed at fostering children's creative expression, memory, and spatial awareness were used even less frequently.

Surveys indicate that parents generally believe computers to be an educational resource. According to Turow (1999), 70% of the parents in households with computers said that children can discover fascinating and useful things on the Internet and 60% said that children without access to the Internet were at a disadvantage compared to their peers who had Internet access. Parents in the HomeNet study said they appreciated the new educational resources that the Internet provided their children, but at the same time worried about erosion of standards (e.g., reading short articles online rather than books) and about the credibility of online information. One mother marveled at the wealth of information that her middle-school aged son was able to discover, but also worried that the sheer abundance of the information was devaluing research and critical thought. Others worried that the information was biased and unbalanced.

Several studies provide preliminary evidence that computer use is positively correlated

with academic achievement, but fails to clarify this relationship. Sparks (1986) reported significant differences between the computer literacy scores of high school students who had educational software at home and those who did not. She further determined that presence of video games and word processing software on a student's home computer were not significant factors in computer literacy scores. Computer use by a male adult in the home was positively correlated with male and female students' computer literacy scores.

Rocheleau (1995) analyzed survey responses from 7th to 12th graders. Students with home computers reported higher overall grades and better grades in math and English than did students without home computers. Given that a home computer is correlated with parent education and SES levels, it is noteworthy that when only children with home computers were examined, heavier users reported better overall grades, better grades in Math and English, and did better on a test of scientific knowledge. Another study that compared the out-of-school activities of 5- to 12-year-old students deemed generally academically ``successful'' and ``unsuccessful'' found that unsuccessful boys spent more time watching television and playing video games than their academically high-achieving peers (Madden, Bruekman, & Littlejohn, 1997).

One program of note is that of Cole (1996), who has been experimenting with the use of electronic communication and games with children in both classroom and after-school settings for nearly 15 years. The after-school programs are called ``The Fifth Dimension,'' and include the typical uses of home computers, such as educational software, computer games, searching the Internet, and multiuser dungeons (MUD) activities. Subject matter includes social development, geography, communications, reading, writing, math, social studies, health, technology, language, and problem solving (Blanton, Moorman, Hayes, & Warner, 1997). The electronic games and Internet activities are based in a total social and cognitive environment that includes a ladder of challenges. Program effects include advances in reading and mathematics, computer knowledge, following directions, grammar and school achievement tests (Summary of cognitive evaluation studies, n.d.). Although Cole's programs are set in after-school settings, his results indicate that well designed games and Internet activities for home use can have a lasting impact on children's academic performance.

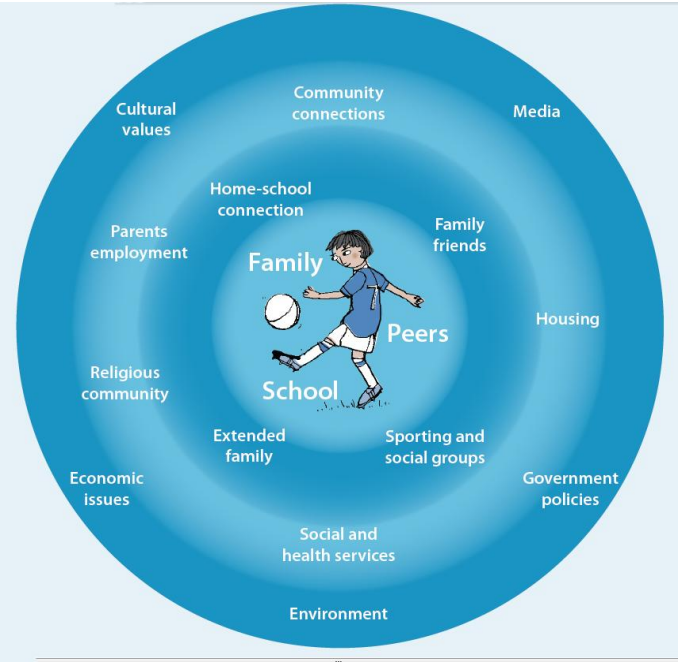
The emergence of the Internet and resulting educational innovations has spawned research focused on the educational impact of projects that integrated home and school computer use through school-driven, technology-enriched curricula (McGarvey, 1986; McMahon & Duffy, 1993). Initially, qualitative studies praised programs like the Classroom of Tomorrow and the Buddy System Project, citing descriptive evidence that home-school computer curricula increased parent ± teacher interaction, bolstered students' self-esteem and motivation for learning, and greatly facilitated learning for students with ADHD and other learning disabilities. However, later follow-ups, attempting to quantify these findings, have found no significant relationship between academic achievement and participation in such projects (Miller & McInerney, 1995). Given that the evidence shows mild positive effects of home computer use on academic performance.

5. EFFECTS ON SOCIAL DEVELOPMENT AND RELATIONSHIPS

Social development involves learning the values, knowledge and skills that enable children to relate to others effectively and to contribute in positive ways to family, school and the community. This kind of learning is passed on to children directly by those who care for and teach them, as well as indirectly through social relationships within the family or with friends, and through children’s participation in the culture around them. Through their relationships with others and their growing awareness of social values and expectations, children build a sense of who they are and of the social roles available to them. As children develop socially, they both respond to the influences around them and play an active part in shaping their relationships. Influences on children’s social development while parents and carers are clearly the first and most important influences on children’s social development, there are many other

influential aspects of the social environment. Examples of the many influences on children's development are shown in the diagram below.

The people and settings that are most closely involved with the child – family, school and peers – are shown at the center of the diagram. Through their daily contact with parents, carers, family members, school staff, as well as with their peers, children learn about the social world and about the rules, practices and values that support it. By actively participating in these relationships, children also affect the ways that adults and their peers relate to them. In addition, children's development is influenced by wider networks of social support (represented in the diagram's central circles), including extended family, friends and any community, cultural or religious groups a child may be part of. These networks provide opportunities for children to develop their social awareness and skills as they relate with different people and experience a range of roles and expectations. As shown in the outer circle in the diagram, children's lives are also shaped by the broader social circumstances that impact on their families and communities, such as access to social and health services, parents' employment and income, or their ability to balance work and family time. In particular, children's sense of social connection is often influenced by community attitudes and by cultural values, including those they encounter in the media. Through their relationships and connections with others, children build a sense of who they are and where they fit in the social world. Coming to an understanding about self and others is therefore a central goal of children's social development.



5.1 CULTURE AND SELF CONCEPT

Having a strong cultural identity enhances adolescent's self-concept and promotes a sense of connectedness and belonging. Adolescent's cultural identity is nurtured when they learn about their own cultural traditions and when those around them show respect for their cultural values. Teaching children to respect and appreciate variations and differences between cultures is therefore very important for all children's social development.

Children from minority cultural groups can encounter differences between the rules and expectations required at school and those they are used to at home. When the differences are not acknowledged, or when the cultural traditions children identify with are ignored or minimized, it can negatively affect children's cultural identity development and sense of belonging.

Children from minority cultures may be subjected to stereotyping and discrimination on the basis of their ethnicity, religion, gender, appearance, social class or sexuality. Discrimination and bullying can have serious effects on children's mental health and wellbeing as well as their social development. By contrast, overcoming discrimination has been found to have positive effects on self-concept. It is very

important for parents, carers and school staff to encourage and support children to take positive action against discrimination and bullying by speaking up and reporting incidents.

5.2 LEARNING SOCIAL VALUES

Adolescent's ability to understand others and take their needs and views into account develops over time. Young children are naturally self-focused. They often play beside, rather than with, other children and tend to think that everyone sees things the same way that they do. In early primary school children learn that others may see things differently from them. Then, as their thinking skills develop, children are more able to understand another person's point of view and, finally, to appreciate multiple ways of looking at the same event or situation.

Teaching children how to put themselves in someone else's shoes helps them to relate better to others and manage conflict more effectively. It promotes caring, respect and fairness. Research shows that children who have learned to value others are more likely to include and appreciate children who are different from them or who are viewed negatively by others.

Research into moral development has highlighted how social behaviour reflects the attitudes people hold about social conventions and about themselves. Learning to take account of others' feelings, perspectives and expectations contributes to children's understanding of social values, and to the values and ethics they choose for themselves. Using an example where children have broken the window of a neighbour's car playing a game, the following table shows how children use different moral reasoning to decide what to do and say.

Examples of moral thinking

Example	Kind of moral thinking
Ella says: "I dare you" *Tao says:* "Let's go before anyone sees us" *Ella says:* "We don't know anything about it"	• Thinking is focussed on impact on self • Decisions about right and wrong are based on avoiding punishment or on personal gain
Harry says: "We're in trouble now".	• Emphasises responsibility and what others think • Decisions are based on gaining approval from others and/or on meeting laws and social obligations
Harry says: "It wasn't his fault. It was that stupid game"	• Emphasises understanding the particular circumstances and coming to a fair outcome • Decisions are based on principles of justice and compassion

Children learn to make ethical judgments through having practice in putting themselves in others' shoes and through being encouraged to reflect on issues that involve social and moral values. Families and schools can work together to help children understand and learn to act on values like respect, responsibility, caring for others, honesty, cooperation and acceptance of people's differences.

5.2 KEY POINTS FOR SUPPORTING CHILDREN'S SOCIAL DEVELOPMENT

Children's earliest and most extensive learning about social relationships occurs in the family. Parents and carers can support positive social development when they model respect and consideration and encourage children to be similarly respectful in all their relationships.

- Provide care and support by tuning into children's needs. Show you are willing to listen and take children's feelings into consideration.
- Help children to develop social skills by providing coaching and teaching them to think through and solve the day-to-day social difficulties they encounter. Supervise and support children's social activities without taking over.
- Ask questions that encourage children to put themselves in someone else's shoes. Questions like "How would you feel if …?"

help children learn skills for perspective-taking. Asking questions in a supportive way helps children to think through situations and encourages them to take others' feelings and perspectives into account.

- Discuss moral issues with children and encourage them to state their opinions and reasons.

Social media sites allow teens to accomplish online many of the tasks that are important to them offline: staying connected with friends and family, making new friends, sharing pictures, and exchanging ideas. Social media participation also can offer adolescents deeper benefits that extend into their view of self, community, and the world, including:

1. opportunities for community engagement through raising money for charity and volunteering for local events, including political and philanthropic events;
2. enhancement of individual and collective creativity through development and sharing of artistic and musical endeavors;
3. growth of ideas from the creation of blogs, podcasts, videos, and gaming sites;
4. expansion of one's online connections through shared interests to include others from more diverse backgrounds (such communication is an important step for all adolescents and affords the opportunity for respect, tolerance, and increased discourse about personal and global issues); and fostering of one's individual identity and unique social skills.

6. IMPACT OF COMPUTER USE ON VIOLENT BEHAVIOUR

6.1DISPLACEMENT OF OTHER ACTIVITIES

When adolescent use home computers instead of watching television, it is generally viewed as positive; but when children use computers instead of participating in sports and social activities, it raises concerns about the possible effects on their physical and psychological well-being. Results from a national survey suggest that in 1999, children between ages 2 and 17 were spending approximately 1 hour 37 minutes per day using the computer and/or playing video games,1 about 24 minutes more than in 1998.6 Yet little research exists on how the adolescent's growing use of computers may be displacing activities other than television viewing, and the few findings that exist are ambiguous. Some evidence indicates that children who use home computers may watch less television than non users, but other evidence suggests that television viewing remains the same or might even increase with the use of home computers.

For instance, parents reported in a 1998 national survey by the Annenberg Public Policy Center that children in households without computers watched television an aver-age of 36 minutes longer each day than chil-dren in homes with computers (2 hours 54 minutes versus 2 hours 18 minutes, on aver-age).7 Children in homes with computers also spent less time watching videotapes and more time doing schoolwork and reading maga-zines or newspapers, compared with children in homes without computers. Even after con-trolling for families' income and education levels, computer ownership had a significant, albeit weaker, effect—that is, in homes with computers, children spent less time watching television compared with children in families with similar income and education but with-out home computers. Interestingly, having a home computer did not affect the time spent reading books or playing video games on noncomputer platforms.

Other studies, such as a 1999 study by Nielsen Media Research, suggest that computer use does little to reduce television viewing. The data gathered by Nielsen showed almost no change in household television viewing after households gained Internet access. Indeed, many Americans report that they prefer to use computers and watch tele-vision simultaneously. A 1999 study of 10,000 U.S. households by Media Metrix, an Internet and digital media research firm, found that among households with a home computer, 49% used their computers and watched television at the same time.9

Still others suggest that, because of the growing trend to link the content of various media—as exemplified by the "tie-ins" between

children's television shows, computer games, and Web sites—computer use may not displace television, but may instead lead to an increase in television viewing.

Furthermore, it appears that greater access to home computers may actually be increasing children's total "screen time," that is, time spent using a computer, playing video games, and watching television combined. For example, parents reported in a 1999 survey that children between ages 2 and 17 with access to home computers and video games spent an average of 4 hours 48 minutes per day in front of a television screen or computer monitor. In contrast, parents reported that children without com-puters or video games spent an average of 3 hours 40 minutes per day in front of a screen, more than an hour less.1 Another national survey of children ages 2 to 18 found that total reported screen time aver-aged 4 hours 19 minutes per day, excluding use of the computer for schoolwork. Reported screen time varied greatly by age, however, ranging from 2 to 3 hours per day for ages 2 to 7, to nearly 6 hours per day for

Parents reported in a 1999 survey that children with computer access spent an average of 4 hours 48 minutes per day in front of a television screen or computer monitor.

6.2 EFFECTS ON PHYSICAL WELL-BEING

Systematic research on the physical effects of children's computer use is lacking thus far, but insights can be gained from several sources. Results from the numerous studies on the physical effects of watching television are informative, given the similarities between these media. In addition, research focusing on the physical risks of playing computer games is important, given that games remain the most frequent home computer activity for children across most age groups, despite the proliferation of other software and applications. (See the article by Becker in this journal issue for further details on the demographics of different types of computer use). These studies suggest that children's extended computer use may be linked to an increased risk of obesity, seizures, and hand injuries.

A. RISK OF OBESITY

Sedentary pursuits, such as watching television and using the computer, are believed to be an important environmental factor contributing to the fact that 25% of children in the United States are overweight or obese. Although there is no research that systematically documents a relationship between obesity and computer use, evidence does exist that obesity in children is linked to excessive television watching, that is, five or more hours per day. As children spend increasing amounts of time in front of computer monitors—in addition to time spent in front of a television screen—they are likely to be increasing their risk of obesity. Consequently, the American Academy of Pediatrics advises parents to limit time spent with media and to emphasize alternative activities, such as athletics and physical conditioning, as well as imaginative play.

B. OTHER PHYSICAL EFFECTS

Since the early years of computer game technology—beginning with video games in the 1970s, followed by the growing popularity of stand-alone game systems like Nintendo in the 1980s16 and the rise of the personal computer in the 1990s—playing games has been the predominant computer activity for children overall. Studies indicate, however, that playing computer games exposes children to a number of physical risks, including seizures, hand injuries, and changes in heart rate.

For example, some research suggests that playing computer games may trigger epileptic seizures in certain users. One research team reviewed 35 reported cases of video game–related seizures and found that abstinence from video games was the preferred treatment, compared to anticonvulsant medication. It appears that the "flicker frequencies" or quickly flashing images, in some video games can trigger seizures in patients with photosensitive epilepsy. After studying 115 French subjects ages 7 to 30, another research team recommended using a 100Hz television screen (with twice the resolution as a standard television screen) and sitting at least one meter away from the screen to reduce the likelihood of video game induced seizures.

Excessive computer game playing has also been associated with a form of tendinitis, called Nintendinitis, which is a sports injury characterized by severe pain in the extensor tendon of the right thumb as a result of the repeated pressing of buttons during game play. Currently there is no systematic research on this type of injury or on the impact of computer use in general on children's eyes, backs, and wrists; however, given children's increasing use of computers, sometimes for prolonged periods, it is likely that children will begin to experience the same kinds of injuries frequently reported by adult computer users. To reduce the possibilities of such injuries, children should be given similar instructions as adults regarding safe computer use, including such precautions as taking frequent breaks and positioning equipment properly. In addition, game manufacturers should avoid producing games with flicker frequencies known from clinical experience to induce seizures in epilepsy-prone patients.

6.3 COMMUNICATION OPTIONS VIA THE INTERNET

Electronic mail (e-mail): Notes and letters sent electronically from one user to one or more others. E-mail uses technology to store and forward messages, so that messages sent at one time can be received at a later time, when the sender is no longer online. Although most electronic mail consists entirely of text, recent e-mail services can include pictures, sound files, and other multimedia documents.

Listservs: Address lists for the distribution of emails related to particular topics.

Usenet newsgroups: Electronic bulletin boards on particular topics where email messages can be posted; users can access messages without being specifically identified as an addressee.

Chat rooms: Communication system organized around particular topics that allow users to exchange e-mails in real time; they can be either public with open access or private with restricted access.

Multiuser domains: Real-time communication systems similar to chat rooms, but organized around role-playing games.

Instant Messages (or "buddy lists"): Software that informs the user when friends or colleagues are online and enables private, one-to-one, text-based conversations.

Who played a nonviolent computer game (basketball)? Furthermore, it has been found that children who have a preference for and play aggressive computer games demonstrate less pro-social behavior, such as donating money or helping someone.

Studies of television have found that continued exposure to violence and aggression desensitizes children to others' suffering, but studies of computer games have not yet explored such a link. At least since the 1980s, however, both the U.S. and British military have used violent video games for training, reportedly to desensitize soldiers to the suffering of their targets and to make them more willing to kill.

7. CONCLUSIONS

Children's daily use of computers is increasing both at school and at home. Although children still spend more time watching television than using computers, use of home computers is growing rapidly, adding to their total "screen time." And although the boys traditionally have used home computers more than girls, mostly to play games, girls are catching up as they use Internet communication activities to send and receive email, play with software such as Barbie Fashion Designer, and care for computer simulated virtual pets. Thus, both boys and girls will increasingly face the issues identified in this article, but a great deal is still unknown.

The strongest evidence examining how home computer use affects children builds on the studies of television concerning physical effects and violent content. The evidence on physical effects links the sedentary nature of computer use to an increased risk of obesity. Children should limit their time with media and should be taught to use computers safely to avoid the types of eye, back, and wrist injuries that have plagued adult computer users. In addition, the evidence of violent content links exposure to violent computer games to increased aggressive behavior. Stronger actions

are needed on the part of policymakers and software developers to reevaluate the content of games targeted to children, to help parents choose appropriate games for their children, and to monitor violent content on the Web.

REFERENCES

[1] Blanton, W. E., Moorman, G. B., Hayes, B. A., & Warner, M. L. (1997). *Effects of participation in the Fifth Dimension on far transfer*. Journal of Educational Computing Research, 16, 371±396.

[2] Brown, J. *Managing the media monster: The influence of media (from television to text messages) on teen sexual behavior and attitudes*. Washington, DC: National Campaign to Prevent Teen and Unplanned Pregnancy; 2008.

[3] Cole, M. (1996). *Cultural psychology: A once and future discipline*. Cambridge, MA: Harvard Univ. Press.

[4] Collins, WA.; Steinberg, L. *Adolescent development in interpersonal context. In: Damon, W.;* Lerner, R.; Eisenberg, N., editors. Handbook of child psychology: Vol. 3. Social, emotional, and personality development. 6th ed.. New York: Wiley; 2006. p. 1003-1067.

[5] Crosnoe R, Johnson MK. *Research on adolescence in the twenty-first century*. Annual Review of Sociology. 2011; 37:439–460.

[6] Institute of Medicine. *The science of adolescent risk-taking Summary of a workshop*. Workshop Highlights. 2010. Retrieved from: http://www.iom.edu/~/media/Files/Report%20Files/2010/The-Science-of-Adolescent-Risk-Taking/Adolescent%20Risk%202010%20Highlights.pdf

[7] Kaiser Family Foundation. *Total media exposure, by age*. Media and Health. 2010. Retrieved from: http://facts.kff.org/chart.aspx?ch=1368

[8] Kraut R, Kiesler S, Boneva B, Cummings J, Helgeson V, Crawford A. *Internet paradox revisited.* Journal of Social Issues. 2002; 58(1):49–74.

[9] Lenhart A, Madden M. *Social networking websites and teens. Pew Internet and American Life Project*. 2007:1–10.

[10] Lenhart, A. *Teens and mobile phones over the past five years: Pew Internet looks back; Pew Internet and American Life Project.* 2009. p. 1-17.Retrieved from: http://www.pewinternet.org/Reports/ 2007/Social-Networking-Websites-and-Teens.aspx

[11] Lenhart, A. Teens, *smartphones, and texting; Pew Internet and American Life Project*. 2012. p. 1-34. Retrieved from: http://pewinternet.org/~/media//Files/Reports/2012/PIP_Teens_Smartphones_and_Texting.pdf

[12] Lenhart, A.; Ling, R.; Campbell, S.; Purcell, K. *Teens and mobile phones; Pew Internet and American Life Project. 2010.* p. 1-94.Retrieved from: http://pewinternet.org/Reports/2010/Teens-and-Mobile-Phones.aspx

[13] Madden, D., Bruekman, J., & Littlejohn, K. V. (1997). *A contrast of amount and type of activity in elementary school years between academically successful and unsuccessful youth*. (ERIC Document Reproduction Service No. ED 411 067.)

[14] McGarvey, L. (1986). *Microcomputer use in kindergarten and at home: Design of the study and effects of computer use on school readiness*. Paper presented at the Annual Meeting of the American Educational Research Association, San Francisco, CA (April)

[15] Miller, M. D., & McInerney, W. D. (1995). *Effects on achievement of a home/school computer project.* Journal of Research on Computing in Education, 2, 198±210.

[16] Pempek TA, Yermolayeva YA, Calvert SL. *College students' social networking experiences on Facebook*. Journal of Applied Developmental Psychology. 2009; 30:227–238.

[17] Rocheleau, B. (1995). *Computer use by school-age children: Trends, patterns and predictors*. Journal of Educational Computing Research, 1, 1±17.

[18] Sparks, J. A. (1986). *The effect of microcomputers in the home on computer literacy test scores.* Central Missouri State University, Warrensburg, MO, unpublished manuscript.

[19] *That Facebook friend might be 10 years old, and other troubling news.* Consumer Reports Magazine. 2011 Jun. Retrieved from http://www.consumerreports.org/cro/magazine-archive/2011/june/ electronics-computers/state-of-the-net/facebook-concerns/index.htm

[20] Turow, J. (1999, May 4). *The Internet and the family: The view from the parents, the view from the press* (ReportNo. 27). Philadelphia, PA: Annenberg Public Policy Center of the University of Pennsylvania. Available at:http://www.appcpenn.org/internet/. (Retrieved from the Word Wide Web, September 26, 2000).

Web sites:

1.http://www.hhs.gov/ash/oah/adolescent-health-topics/americas-adolescents/day.html
2.https://my.vanderbilt.edu/developmentalpsychologyblog/2014/04/effect-of-video-games-on-child-development/
3.https://www.kidsmatter.edu.au/sites/default/files/public/KMP_C3_CSD_AboutSocialDevelopment.pdf
4..*http://www.futureofchildren.org*