

Effects of Home Environment on Internet Use and Dependence of Children and Adolescents

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Abstract

In this study, the concept of internet dependence of adolescents is explored. Due to the prevalence of digital media, many young people experience the borderline of becoming addicted to the internet, often causing problems in their personal and social lives. For the purposes of this study, internet dependence is defined broadly to include the over-use and abuse of the internet that may have a negative impact on children and adolescents. A survey was conducted on 1002 parent-child pairs in Seoul Metropolitan area in South Korea. Children between the ages of 10 and 15 and their mothers were included in the sample. The parent was asked about the home media environment and how parents monitor and guide their children's media use at home. The results reveal that the age of child, media-richness and restrictive mediation of parents were not significant factors that influence internet use and internet dependence. Internet dependence of the child could be explained by the time child spends online, how competent the child is in using the internet, active mediation of parents and interaction type with parents. Children who engage in outdoor activities with their parents were less likely to have high levels of internet dependence. The transition from mass media to digital media often means the personalization and mobilization of media. While mass media is usually consumed a context of the home, digital media expands into personal mobile spaces. Nonetheless the media environment at home, including the media-richness and parents' mediation, significantly affects the way children use digital media. This is because most media habits are formed within the context of home. Further analysis of how the personalized use of media and how that is related to the habits and norms that are developed at home is called for in future studies.

Keywords

internet use; internet dependence; parental mediation; children; adolescents home media.

Introduction

According to Pew Internet 93% of U.S. teenagers aged 12 to 17 use the internet on a regular basis (Lenhart, Purcell, Smith, and Zickuhr, 2010) and 66% of children and young people aged 8 to 18 own mobile phones (Kaiser Family Foundation, 2010). The statistics are similar in South Korea. 99.9% of teenagers use the internet (KISA, 2010) and 81.8% use mobile phones (KCC, 2010).

Globally, digital media have become an important part of young people's lives in the 21st century. Providing access to digital media enables young people to get information, learn and participate in the society. However, there is also a downside of using the technologies among young children in such ways that cause personal and social problems such as becoming addicted, invading upon privacy, copyright issues, etc.

Among the negative consequences, this study explores the over-use of the internet by children and young people, which may affect their normal routine at school, home or in their social lives. Instead of using the concept of addiction, I prefer to use the term 'dependence' since it embraces a broader range of general over-use and not in only in a narrow pathological sense. The concept of internet dependence is less rigid than internet addiction. Internet addiction is a pathological state where in most cases, clinical treatment is required. However, on the borderline of pathological internet use there is an area of dysfunctional internet use that causes concern because it results in everyday conflicts and problems.

Media consumption habits are formed during the early ages of childhood and usually within the context of home. Parents have an enormous influence over what types of content and media children are exposed to in the early stages of life. Parents provide children with media devices, set the rules at home in regards to usage, provide examples by communicating their thoughts and beliefs about how a person should use and understand media content (Na, Kim and Park, 2009; Kim, 2011; Park, Yoon and Yang, 2004; Song et al, 2009). Even with digital media, where much of the consumption takes place in individual spaces and outside of the home boundaries, parents continue to exercise influence on the amount and ways children use the media. The impact is subtle because there seems to be minimal intervention in children's digital media use (Tapscott, 2008). This study looks at how home environment set by the parents affect internet use and dependence among young children. I use a broad concept of home media environment that includes not only the parenting and interaction style of parents but also the availability and richness of media environment at home.

Literature review

Internet dependence

Internet addiction among young people is becoming more of a concern with the growth in the penetration worldwide. Usually addiction is studied as a clinical condition to be treated. There have been empirical studies on how pathological use of the internet may harm people and develop further mental problems, such as depression (Change and Law; Richards, et al, 2010). A meta-analysis of internet use and psychological well-being concludes that there is a small detrimental effect of internet use on level of depression, self-esteem and life satisfaction (Huang, 2010).

With new digital devices and the increased penetration of the internet in the daily lives of young people, over-use or mal-use of the new technologies is becoming an increasing concern for parents and policymakers. Especially when there might be an area where young people in fact over-use the technology and become dependent but cannot be diagnosed as pathological and thus are difficult to seek professional help. This type of problematic internet use is as much of concern as well as addiction.

In this study, the term 'internet dependence' is used in a broader sense than pathological addiction in order to embrace all types of mal-use of the internet among young people. The term is used broadly to include the over-use and abuse of internet that might negatively affect children and young people's everyday lives. Internet dependence is not simply staying online for long periods of time but it implies a use such that it has an attitudinal and behavioral impact on the everyday functions of a person.

Parental mediation and interaction

Digital media, such as the internet, mobile phones and game consoles, are more personalized both in the very act of consuming and in the context of consumption. Thus, it may be problematic to apply theories and empirical findings of mass media such as television, directly to digital media. For instance, internet is a personalized medium where consumption occurs at the individual level. In contrast to television, internet usage is sporadic and spread throughout the day, often involving entertainment, work and communication. Increasingly the usage occurs in mobile spaces even within the home. Parents are less knowledgeable about the complex technologies and it is often the case that children have higher competency in using the internet (Facer, Sutherland, Furlong, and Furlong, 2001; Tapscott, 1998; 2008). To complicate the matters, parents tend to have dubious perceptions about the effects of internet exposure. They want their children to perform well and be able to fully utilize this new technology for

their benefits but parents also fear the potential negative content that are so readily available on the internet (Park, 2005).

Nonetheless, the home is where most children experience media technologies and develop their usage habits. Media in the home not only provides the necessary access to technologies but parents, in particular, have an impact on how children perceive and use the media. Parent-child interaction plays an important role in forming young people's habits and attitudes of media use. Parental interventions (Padilla-Walker, 2006; Valkenburg, Krcmar, Peeters and Marseille, 1999) as well as family communication style (Krcmar, 1996; Messaris and Kerr, 1983) affect the way children use the media. Parents have enormous amount of influence on their children in forming attitudes, values and behaviors. Research on child psychology also concludes that the level of involvement of parents in their children's lives and the type of intervention affects the social and emotional well-being of children and adolescents (Arim, Marshall and Shapka, 2010; Barber, Stolz and Olsen, 2005; Smetana and Daddis, 2002).

The potentially conflicting values of peers and media often bring about proactive parenting, especially in regards to the media (Padilla-Walker, 2006; Padilla-Walker and Coyne, 2010). Despite parental concerns about the negative effects of media, a study reports that only one third of parents use media restriction or monitoring on their teenage children (Kaiser Family Foundation, 2010). Among the proactive remedies, there are different types of parental intervention in media use. Cocooning or restrictive mediation is when parents restrict certain types of content, usage time and placement of devices within the home. The goal is to avoid exposure altogether or to restrict usage. On the other hand, pre-arming or active mediation is a method of open discussion with the child about the messages in the media. The aim is to build the child's critical thinking. The third type is co-viewing, where parents consume the media with their child (Padilla-Walker and Coyne, 2010). Valkenburg, Krcmar, Peeters and Marseille (1999) identify the different methods as restrictive intervention, social co-viewing, and instructional intervention. Similarly, Nathanson (1999, 2001a) proposes three strategies of parental regulation; active, restrictive, and co-viewing mediation, also used by Livingstone and Helsper (2008). Restrictive intervention generally refers to controlling the content children get access to and active mediation means talking about the content after exposure so that children can actively interact with the content. Co-viewing generally means passive monitoring by way of consuming media together.

The effectiveness of each parental monitoring method has been under scrutiny with inconclusive results. Restrictive intervention was found to be generally effective (Desmond, Singer, Singer, Calam, and Colimore, 1985; Raminez, Norman, Rosenberg, Kerr, Saelens,

Durant and Sallis, 2010), while Nathanson (2002) found that restrictive intervention led to more positive attitude towards content and more viewing with peers. Buijzen, Van der Molen, and Sondij, 2007) found neither positive nor negative effects. Raminetz et al (2010) found that limiting screen time at home and also not having screen-based media in the bedroom both reduce adolescents' usage. Cocooning appears to be more successful with younger children (Nathanson and Yang, 2003), the reason being that restricting behavior is a signal towards the child that the parent is involved (Nathanson, 1999) and parental influence wane when children reach adolescence (Nathanson, 2001b). Most parents use more than one approach to intervention and it is suggested that cocooning works well for adolescents if used with pre-arming (Nathanson, 2002). Research on restrictive intervention also has mixed results. Park's (2005) study also showed no correlation between parents' restriction and the children's TV and internet usage.

Co-viewing is sometimes conceptually separated from active intervention (Austin, Bolls, Fujioka and Engelbertson, 1999) but it also has both positive and negative effects. Some studies show that co-viewing facilitates learning aggression from violent television because children tend to believe co-viewing as endorsement (Nathanson, 1999; Nathanson, 2001a) but also has positive educational outcomes (Valkenburg, Krcmar, and De Roos, 1998). Wilson and Weiss (1991) studied preschoolers' reactions to scary television shows while watching with siblings and found that they were less emotionally aroused compared to those who watched alone.

Not only the type of intervention but the existing relationship between the parents and children affect the effectiveness of mediation. In Warren, Gerke and Kelly's (2002) study, parental involvement was important and mediation was dependent on parents' accessibility to children. The fact that parents' intervention shapes the child's attitude and consequently modifies the effects of the medium is in line with the uses and gratification tradition. According to the uses and gratifications theory, an individual's attitude towards a medium affects the extent of what they see and also how they are affected (Rubin and Perse, 1987).

The type of online content children access was related to what parents' recommend as useful and also their co-using habits. Again, parental restrictions on time and Web sites did not alter children's actual internet usage (Lee and Chae, 2007).

Some studies find the relationship between family communications and the influence of negative content (Cho and Cheon, 2005; Wartella et al., 2002), while others focus on the contextual factors such as internet usage time (Kim, Na and Park, 2007). Communications among family members help mediate children's overall experience of the internet. The level of

intimacy between parents and children as well as the parents' attitudes toward the internet were good predictors of the children's exposure and response to negative content online (Cho and Cheon, 2005; Wartella, et al., 2000). Usage is also a function of family relations. It has been shown that internet use is negatively related to adolescents' perception of the quality of family relationships (Mesch, 2003). Other studies have found that the time children spend with screen media is associated with poorer attachment to parents (Richards, et al, 2010).

Studies have shown that malfunction and miscommunication within the household can lead to adolescence delinquency. Communication within the household is important for children to use the media wisely and intelligently. This is more so in the case of digital media since, digital media require active involvement and self-control of the user. This argument is consistent with the fact that it has been repeatedly reported that parental control of children media use, especially restrictive mediation is proven to be not as effective in the digital media environment. Parents play an important role in providing the digital environment and mediating media use of their children. This study explores both the parental mediation and communication style within the family and examines how they can influence the internet usage of children.

Family communication affects children's general media use including TV viewing habits (Austin, 1993; Krcmar, 1996; Messaris and Kerr, 1983). How children interact with their family members is crucial to determining their behavior. Livingstone (2002) identifies six different types of family types based on the levels of interaction; low interaction, conventional, intimate, talkative, democratic and high interaction families (p191). Children from low interaction families have the least favorable attitudes towards their parents. High interaction families, in contrast, are more communal in their orientation and have higher levels of satisfaction. Co-consumption of media is correlated with other communal activities.

Both the frequency of interaction and the quality have consequences in the overall behavior of children. Therefore, not only the type of parental mediation but the overall home media environment, the interaction among family members should influence the amount and way children use the media.

Research questions

The overall home media environment including the accessibility to media, interaction with parents and the type of parental mediation, is predicted to have an impact on how much a child uses the internet and how dependent the child tends to be on the medium. Two research questions were set up as follows;

RQ1. What is the relationship between home media environment with children's internet use?

RQ2. What is the relationship between home media environment with children's internet dependence?

Previous studies indicate that not only the home media environment of providing access to media but also the parents' involvements in various forms affect the children's usage and attitude toward media. In this study, a broad concept of 'home media environment' is used to include not only the physical access but also the parents' guidance in media use.

Method

Data

Face-to-face interviews were conducted with 1002 children and their mothers in the Seoul Metropolitan area including Bundang and Ilsan, the two major adjacent suburbs. A stratified sample was drawn from districts to include children and adolescents in grades 5th to the 9th. The interviews were conducted between December 17, 2007 and January 25, 2008. The sample consisted of 50.2% girls and 49.8% boys, evenly spread out across age groups. A summary of respondents are on Table 1.

Table 1: Summary of respondents

School	Grade	M	F	Total
Elementary	5	101	100	201
	6	101	102	203
Middle school	1	99	101	200
	2	102	100	202
	3	100	96	196
Average age of children		13.9	13.5	13.07
Average age of mothers		41.19	40.98	41.08
Total		503	499	1002

Variables

Internet use time

The average use time per day was measured in minutes. Internet use time included all activities including games, searching, chatting, etc. Internet usage is very difficult to gauge accurately, so two different methods were used. First the average time a person spent on the internet was measured. Then children were asked on a scale 'never use' 'rarely use' 'use about once a month' 'use about once in two or three weeks' 'use about once or twice in a week' 'use about 3~5 times per week' 'use almost every day' 'use several times a day' for 12 different types of internet content; homework, games, news, search, email, IM, post messages, blogging/SNS, video, music, surf and shopping. The average score of the scale was compared with the first variable. Correlation between the two variables were high enough ($r = .289$) to conclude that the first method of measuring internet use could be used as the dependent variable in this study.

Internet dependence

Internet dependence was measured by adapting Young's Internet Addiction questions (Young, 1999). Young (2004) characterizes Internet Addiction as an impulse-control disorder that mainly involves psychological dependence and results in distress in daily life. Chang and Law (2008) reduced the scale into three factors of 'withdrawal and social problems', 'time management' and 'performance and reality substitute'.

Among the seven constructs that constitute internet addiction, disturbance of reality and interpersonal relation orientation substitute were omitted and five less pathological states were included; withdrawal, compulsive use, positive anticipation, tolerance and deviance. Children's internet dependence was measured on a five-point scale asking how much they agreed with each statement from 'not at all' to 'very much'. The statements used in this study were (1) I keep using the internet even though I have other obligations (2) I want to reduce the amount of internet usage but can't (3) When I am on the internet I can't keep track of time (4) Life would be boring without the internet (5) When I am not on the internet I feel that life is empty (6) Internet interferes with my studies (7) Internet relieves my stress (8) I feel better when I am on the internet (9) Internet has caused conflict with family members (10) I use the internet behind my parents' back. Cronbach's alpha was 0.913.

Parental mediation

Both restrictive and active parental mediation were measured, since they may result in different outcomes. Restrictive mediation was measured by asking the parents if they have rules to restrict the time children spent on the internet and games on a five-point scale from 'not at all' to 'very much'. The average of the two scales was used as the variable for restrictive mediation. Cronbach alpha was 0.819. Active mediation was measured by asking the parents if they knew which internet sites and online games their children used, respectively, also on a five-point scale. Cronbach's alpha was 0.713.

Time spent together with parent

Mothers were asked how much time they spend with the child on average on a weekday, excluding sleep time. The answer ranged from 'seldom see my child' 'less than one hour per day' 'one to two hours per day' 'three to five hours per day' and 'more than five hours per day'. The variable was used as a scale even though it was measured as an ordinal variable.

Parent-child interaction

Parents were given a list of indoor and outdoor activities and asked how often they engaged in each of them with their child on a five-point scale of 'never' to 'very often'. Indoor activities included card/board games, listen to the radio, listen to music, crafts, talk about books, play video games and use the internet (Cronbach's alpha = 0.840). Outdoor activities included go to parks/recreation facilities, go to the movies/theater, play sports and hobbies (Cronbach's alpha = 0.789).

Child's media richness

The number of devices the child can use at home was measured by asking the parents whether or not the child owned or used the product or service in their own room. Media devices included television, DVD player, home theater system, PC or laptop, internet connection, audio (MP3 or CD players), portable game or multimedia device such as PMP or PSP, console game, camcorder and digital camera. The sum of the devices owned in the child's room was used to gauge the media richness of each child.

Parent's internet use time

The time spent on the internet per day was measured by asking the mother how much on average she spends on the internet including games.

Extracurricular activities

Media use is usually a function of how much a person spends at home. For school age children, the time spent at home is correlated with the number of activities they engage in after school. To see if this is related to media use, the number of extracurricular activities the child participates in was measured by asking the child whether or not they received extra tutoring in the following subjects; Math, Science, English, Korean, Social Studies, Arts or sports, Third language, Writing and Chinese characters. The sum of the number of subjects was used as the variable.

Internet competency

Internet competency was measured by asking the child how well they could perform the ten activities online on a five-point scale from 'not at all' to 'very well' ; finding friend's blog or SNS site, uploading photos or images on to a bulletin board, attaching files to email, downloading files from the internet, listening to music or watching video clips, moving downloaded files to other devices, making a web site, editing video files, editing photo/images ("photoshop") and using text, music, image and video clips to make a presentation document. The average of the ten scales was used as the variable.

Gender and age

Boys were coded as one and girls zero to use as a control variable to see the gender differences. Age of child was also used as a control variable.

Results

Regression analyses were conducted to see how the home media environment is related to young people's internet use and over use. First, the time children and adolescents spent on the internet were regressed on home media environment factors and the child's demographics. Age was not a significant variable in explaining the time spent online. However boys tended to spend more time online compared to girls. The reason age was not an important factor is because the selected respondents were between a certain age range – children born between 1992 and 1997 – which can explain the homogeneity within the sample.

The variable, "media richness of child" as measured by how many digital media devices they own, was not significant. It should be noted that 93% of the respondents had less than 4 out of 10 media devices in their rooms, 53.3% of the respondents owning their own computer. Thus the variance was not large, which may explain why this variable was not significant.

Extracurricular activities were significant and negative. Children who participate more in after-school studies or activities spend less time on the internet as predicted.

Table 2: OLS regression results (I) : dependent variable is internet use time

Variables	B	Std. Error	Beta	t	Sig.
(Constant)	85.21	24.29		3.507	0.00
Indoor activities with parent	6.47	3.75	0.07	1.728	0.08
Outdoor activities with parent	-12.67	3.10	-0.15	-4.088	0.00
Active mediation	-5.55	2.52	-0.08	-2.205	0.03
Restrictive mediation	-3.16	2.16	-0.05	-1.467	0.14
Weekday time spent with mother	3.71	2.41	0.05	1.538	0.12
Age	-0.86	1.39	-0.02	-0.621	0.53
Gender	14.22	3.69	0.12	3.859	0.00
Extracurricular activities	-3.83	1.10	-0.11	-3.481	0.00
Media richness of child	0.85	1.48	0.02	0.571	0.57
Child's internet competency	15.16	2.52	0.19	6.017	0.00
Parent's daily internet use time	0.25	0.04	0.19	6.137	0.00
Adjusted R square	0.101				

Depending on the type of parental mediation, the effects on internet use time varied. Restrictive mediation variable was not significant, although the coefficient had a negative direction. The coefficient for active mediation was negative and significant, which means that restrictive mediation is not effective while active mediation may be effective in reducing the time a child spends on the internet. While knowing what the child does on the internet per se will not reduce the time spent online, it is more likely that parents who know what the child does online will be more interactive and communicative with their child.

Parents' time spent with the child during the week was not correlated with internet use time. However, when we look at the interaction between parents and children in terms of indoor and outdoor activities, we can see a clearer pattern. Children who engage in more outdoor activities with their parents use the internet less. This is intuitive since time spent outside means

less time spent in front of a screen at home. Indoor activities had a positive correlation with the child's internet use. Among the indoor activities, playing online games together with the parent and using the internet together were included in the measurement, which means that the increase in indoor activities could mean an increase in time spent in front of a computer, be it alone or together. The time the mother spent online was correlated with the child's internet usage as found in previous studies (Park, Yoon and Yang, 2005). The example the parents set at home is consistently important in determining how children use media.

The adjusted R square was 0.101 which implies that there are other factors that influence a child's internet use time and the atmosphere the parents set for children is only one of the many factors that shape internet usage behavior of children.

The second set of regression analysis was conducted to examine how home media environment affects the internet dependence of children and adolescents. The child's gender and age variables were not significant. Extracurricular activities, media richness of child were also not significant. The child's internet use time was positive and significant. If a child spends more time on the internet it is indicative of the child's internet dependence. Whether or not this is the cause cannot be inferred from the data in this study. However, the correlation between the two variables implies that internet dependency can be reduced by limiting the time spent online. However, restrictive mediation by parents was not a significant variable. It is not effective to limit the time a child spends online by setting the rules. On the other hand, active mediation variable was effective. Higher levels of active mediation resulted in lower levels of internet dependence. Parents' interaction with children was also important, especially the outdoor activities they share. Indoor activities with parents were not significant.

The child's internet competency was positively related to internet dependence. As the child is exposed to more types of services and skills required to use the internet, the chances are that his or her internet dependency increases. The adjusted R square was 0.16.

Table 3: OLS regression results (II) : dependent variable is internet dependence

	B	Std. Error	Beta	t	Sig.
(Constant)	3.928	0.2978		13.189	0.00
Indoor activities with parent	0.063	0.0457	0.05	1.372	0.17
Outdoor activities with parent	-0.204	0.0380	-0.19	-5.387	0.00
Active mediation (internet and game)	-0.065	0.0307	-0.07	-2.124	0.03
Restrictive mediation (internet and game)	-0.030	0.0263	-0.04	-1.152	0.25
Weekday time spent with parent	-0.158	0.0292	-0.16	-5.393	0.00
Age	-0.026	0.0169	-0.05	-1.517	0.13
Gender	0.004	0.0453	0.00	0.095	0.92
Extracurricular activities	0.006	0.0135	0.01	0.409	0.68
Media richness of child	-0.029	0.0181	-0.05	-1.620	0.11
child's internet competency	0.296	0.0313	0.30	9.458	0.00
Child's daily internet use time	0.001	0.0004	0.09	2.963	0.00
Adjusted R square	0.16				

Conclusion

Knowing how media consumption habits are formed at home at an early age is important since once fixed, media tastes and habits do not change easily. Parents have a big influence on how children and young people are exposed to various media at home. Not only do they provide access to devices and services but also set rules and provide examples by communicating their beliefs about how people should use and understand media. This study looked at how home environment set by the parents affect internet use and dependence among young children. Both home environment and internet dependence were broadly defined in order to include the various usages and interventions within the home.

A national survey in South Korea revealed that the parents' use of internet, the way parents intervene, the time the child spends at home and time spent with parents outside were all significant predictors of a child's internet use. Direct restriction on usage time was not effective as found in previous studies. The media richness of home was not a significant variable that

explains young people's internet use time. Providing children access to media alone does not enable them to use it in a certain way. Rather the interaction among family members, especially with parents seems to be important in determining how young people use the media. Screen time is in competition with other leisure activities and was reflected in the negative coefficient of time spent with parents outside the home.

Similarly, internet dependence was negatively correlated with active parental mediation. Internet dependence was also a function of the time spent on the internet and internet competence. Those who use the internet more and at ease have higher levels of internet dependence. This implies that internet use has both negative and positive impact on young people. Internet use has beneficial outcomes as well as negative impact since it exposes young people to a variety of content.

The implications of this study are that parents' active involvement can reduce the risks of internet use, not only in terms of time spent online but also the type of content children get exposed to. In the digital media era, the role of parents in mediating media use is changing, where more interaction with the children is required to have an impact on how children use the media. However, the risks that young people today are exposed to are unprecedented and unknown to their parents. So becoming an active mediator may be problematic due to this digital gap among the parents and children. Thus, we need to take up a broader approach when examining the parents' role in mediating digital media use of children and adolescents. Further investigation on the role of parents in different levels of internet competence is necessary to see how the digital gap may influence the family dynamics in internet use and mal-use.

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