Internet Parenting Styles and the Impact on Internet Use of Primary School Children

Abstract

Next to available data about actual Internet use of young children at home, most research especially focuses on the threats and opportunities about active Internet usage. Limited empirical research focuses on the role and impact of parents in this context. In the present study, Internet parenting styles are defined and operationalized to study the impact on actual Internet usage of children at home. Two dimensions are distinguished in Internet parenting styles: parental control and parental warmth. Based on a survey, involving 533 parents from children in primary schools, this Internet usage was studied from the perspective of Internet parenting styles. Results point at high Internet access at home. As to the parenting styles, we observe a dominance of the authoritative parenting style (59.4%). The styles differ when controlling for parent gender, educational background and age. Parenting styles are also linked to level of parent Internet usage, Internet attitude and Internet experience. Parenting styles also significantly affect child Internet usage. The highest child usage level is perceived when parents adopt a permissive parenting style; the lowest level is observed when parents adopt an authoritarian Internet parenting style. The variables Internet parenting style, parent Internet behavior, and parent educational background significantly predict Internet usage of children at home (R^2 = .44). Theoretical and practical implications are discussed and directions for future research.

Keywords: parenting styles, Internet, home usage, safe Internet usage

Running head: Internet parenting styles and Internet usage at home

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Introduction

The current generation of young children is the first not having experienced a world without ICT. They are therefore called "digital natives" (Prensky, 2001), "the net generation" (Oblinger & Oblinger, 2005), "screenagers" (Rushkoff, 1997), or "millenials" (Howe & Strauss, 2000). Despite their straightforward access to the Internet, it is an illusion to think that their use of the Internet is not challenged. Many authors state that this generation is not only to be called "whiz kids" (Lee and Chae, 2007), but also "risk-kids" (Kuipers, 2006).

Livingstone (2003) discussed all-round use of the Internet by children and distinguished three main categories: (1) entertainment, (2) education, and (3) edutainment. We can add a fourth category that refers to the consumer role of children via the Internet. Young children are approached via "gamevertising" (Youn, 2008), and involved in activities as active consumers (Tufte, 2006).

Recent research – in developed countries – clearly indicates that Internet use is mainly a home based activity. Up to 91.2% of primary school children surf on the Internet at home; in contrast to about 66% at school (Lee & Chae, 2007; Mumtaz, 2001; Valcke, Schellens, Van Keer, & Gerarts, 2008). This introduces the critical role of parents in view of safe Internet usage and Internet education. The latter is according to Livingstone (2007) also obvious when we compare the extent to which children feel confident about using the Internet (92%) versus their parents (62%). This points at a "generational divide" in Internet usage (Mitchell, Finkelhor, & Wolak, 2005). A remarkable side effect is, according to Kiesler, Lundmark, Zdaniuk, and Kraut (2000), that parents consider their children as a "home guru" in view of the computer and the Internet.

The need for "net-education" is clear when we review research about Internet risk behavior of young children. It seems that young children lack a sufficient level of e-maturity to be able to manage these risks. In an earlier study, we observed that 86.3% of the primary school children did reflect unsafe Internet usage. Five Internet risk areas can be distinguished (Vanlanduyt & De Cleyn, 2007). Firstly, the Internet can have a negative impact on social relations. Research points at 42% of children being a victim of cyber-bullying (Chisholm, 2006; Vanlanduyt & De Cleyn, 2007; van Rooij & van den Eijnden, 2007), or cyberstalking (Kerbs, 2005). Secondly, research points at a negative emotional impact due to unwanted exposure to pornography, violence, explicit language, etc. (Beebe, Asche, Haarison, & Quinlan, 2004; Chisholm, 2006; Fleming, Greentree, Cocotti-Muller, Elias, & Morrison, 2006; Livingstone, 2003; Mitchell et al., 2005; Valentine & Holloway, 2001). Many children (up to 16.7%) indicate they have been threatened online (De Rycke, 2007; Valcke, Schellens, Van Keer, & Gerarts, 2007; Wang, Bianchi, & Raley, 2005). Many don't understand the risks of passing personal details to unknown Internet "friends" (Livingstone, 2003; Youn, 2008). Thirdly, the Internet seems to affect physical health. For instance, research points at obesities, reduced concentration, and muscle pain (Barkin, Ip, Richardson, & Klinepeter, 2006; Vanlanduyt & De Cleyn, 2007; Wang et al., 2005). Fourthly, studies observe a negative impact on time management, resulting in Internet addiction and neglect of school tasks, lower involvement in family activities, etc. (Kerbs, 2005). Lastly, authors indicate the risk of consumerism and commercial exploitation (Livingstone, 2003). In the context of these five risks areas it is important to consider that parents do not fully understand these risks (Chisholm, 2006; Livingstone & Bober, 2004).

The rapid adoption of the Internet by the younger generation, is central to research about technology acceptance models (TAM). In this research (see e.g., Bourgonjon, Valcke, Soetaert, & Schellens, in press; Martínez-Torres, Toral, Barrero, Gallardo, Oliva, & Torres, 2009; Toral, Barrero, & Martínez-Torres, 2007)), a series of variables is entered as predictors for technology acceptance. This field of research is important since it considers both internal (cognitive, volitional, experience related) prediction variables and external prediction variables. The present study centers on such external variables that – in this case – originate from parents: the way they support, control, manage, or direct technology use of their family members. As will be stated at the end of the article, future

TAM research could build on the results of the present study to incorporate Internet parenting styles as a potentially relevant predictor.

The role of parents in relation to Internet use of young children is a relatively new research theme. Available research centers on "control" (De Rycke, 2007; Livingstone, 2007; Lwin, Stanaland, & Miyazaki , 2008; Wang et al., 2005) or on "support by parents" (Grossbart, McConnell-Hughes, Pryor, & Yost, 2002; Valkenburg, 2002). Some studies consider both perspectives (Barkin et al., 2006; Bauwens, 2007; Eastin, Greenberg, & Hofschire, 2006; Pauwels, Bauwens, & Vleugels, 2008; Rosen, 2008). Available studies hardly involve the parents since they mainly gather information via their children. This can result in a potential sampling and research bias due to a too strong focus on "the child's subjective experience of parental monitoring" (Heim, Brandtzaeg, Hertzberg, & Endstad, 2007, p. 444). In addition, these studies do not consider parenting styles. Wang et al. (2005,) state in this context: "We know very little about what happens when parents, children, and the internet come together" (p. 1257). Barkin et al. (2006) add: "Little is known about parents' role in mediating their children's media use" (p. 395). This brings Tiller, Garrison, Benchea Block, Cramer, and Tiller (2003,) to state that "There is a need to study families with younger children so that parents better understand their children's development in light of their own parenting practices" (p. 3). Though some research about parenting styles is available in the literature, the empirical basis is limited, does yet not focus on all dimensions in parenting styles, is not based on data from the parents themselves, and does not consider other variables and processes that interact with these parenting styles.
In the present article, we firstly centre on the potential role of parents in relation to Internet usage of primary school children. This is next studied from the perspective of parenting styles and variables and processes in parents and children interacting with parenting styles. An empirical study is reported to uncover the nature of Internet parenting styles and how this influences actual Internet usage of their children.

Theoretical base: Parent roles and parenting styles

Parent roles

Darling (1999, p. 1) and Darling and Steinberg (1993, p. 487) define parenting as follows: "Parenting is a complex activity that includes many specific behaviors that work individually and together to influence child outcomes". In the literature, authors point at a material and a symbolic responsibility of parents to foster the development of e-mature children (Livingstone & Bober, 2004). Their "material role" is linked to purchasing computers, and giving access to the Internet in the home context (e.g., where to put a computer?). Their "symbolic role" is related to the establishment of rules about home Internet usage. Children seem to play a large mediating role due to the impact of a "reversed socialization". Grossbart et al. (2002) introduced this concept to help to explain situations where children developed a better understanding and/or have acquired better skills as compared to their parents. This results in children influencing the acquisition of the hardware, and the hardware being installed out of sight of the parents (Duimel & de Haan, 2007; Verwijmeren & Admiraal, 2006; Youn, 2008). The symbolic role of parents is reflected in talking with their children about the Internet (Valkenburg, 2002); installing filter-software (Delver, 2003); checking on children accessing the net (Eastin et al., 2006); checking Internet log files (Pardoen & Pijpers, 2006); defining Internet usage rules (Barkin et al., 2006); surfing together on the Internet (Eastin et al., 2006). Adopting both the material and symbolic role is expected to foster the education of responsible cyber-citizens (Beebe et al., 2004). This introduces the concept of parenting styles and the related Internet parenting styles.

Parenting styles and Internet parenting styles

Baumrind writes: "A parenting style is used to capture normal variations in parents' attempts to control and socialize their children" (Baumrind, 1991, p. 57). The double focus in this definition is also found in the approach of Eastin et al. (2006): socialization-involvement and control-strictness: "A

parenting style represents the amount of involvement and strictness used by a parent to deal with their teen." (Eastin et al., 2006, p. 493). In the context of this article, we build on the approach of Baumrind (1966, 1967) and the further elaboration of this theory by Maccoby and Martin (1983). The initial theory of Baumrind mainly focused on the dimension of control: parental demandingness, defined as behavioral control refers to "the extent to which parents desire children to become integrated into the family whole, by their maturity demands, supervision, disciplinary efforts and willingness to confront the child who disobeys." (Baumrind, 1991, p. 61). Maccoby and Martin (1983) distinguished a second dimension, focusing on parental warmth (see also Darling & Steinberg, 1993). This is recognized by Baumrind, and she consequently states that Parental responsiveness, defined as parental warmth or supportiveness refers to "the extent to which parents intentionally foster individuality, self-regulation, and self-assertion by being attuned, supportive, and acquiescent to children's special needs and demands." (Baumrind, 1991, p. 62). Though the concept "parental warmth" might be less straightforward for some readers, we prefer to stick to the wording as coined by the original authors. For ease of understanding, readers could adopt the concept "parental involvement, or parental supportiveness".

Parental control is reflected in the level of guidance, stopping certain Internet related behavior, and/or putting forward rules. Parental warmth is characterized by an investment in communication with their children, and by levels of giving support. We review the research literature about parents and the Internet on the base of these dimensions.

Parental control

Eastin et al. (2006) and Duimel and de Haan (2007) indicate that in about 30% of families, parents remain physically present during Internet usage of their children. Others rely more on installing filter software, or on checking the history of the Internet browser (Beebe et al., 2004; Mitchell et al., 2005; Wang et al., 2005). More than half of the parents report to do this (56.4 %). Up to 26.3 % report to do this even regularly (Walrave, Lenaerts, & De Moor, 2008). Less research data is available as to stopping Internet usage. Only in the study of Walrave et al. (2008), researchers report that parents stop e.g., contacting others via instant messaging systems when kids are approached by or approach strangers.

Researchers report that parents limit access time, or determine the moment to access the Internet (Wang et al., 2005). Others check websites their children can have access to (European Commission, 2008; Valentine & Holloway, 2001). Only a minimal proportion of parents explicitly state Internet usage rules about access time (Duimel & de Haan, 2007). Most youngsters report (86.8%) to be free to access Internet sites. Only 13.2 % of children receive guidelines by their parents (Walrave et al., 2008).

Parental warmth

Parents are expected to create a safe and respectful environment. Children should get the opportunity to raise questions about Internet usage to their parents (Fleming et al., 2006). This is a key condition to be able to guide their children (De Rycke, 2007; Valkenburg, 2002; Van Kolfschooten, 2004). Kuipers (2006), Fleming et al. (2006) and Lwin et al. (2008) stress the importance of an understanding and respectful attitude in view of reacting to children who looked at less acceptable content via the Internet. Youn (2008) adds the need for an open atmosphere to talk about Internet safety. It is therefore striking to observe that less than 67% of parents talk with their children about the Internet (Duimel & de Haan, 2007). Research also points at a positive impact when parents surf together with their children on the Internet and/or recommend specific websites (Lee & Chae, 2007). This is nevertheless only observed in about one third of parents. About 36% sits next to their child while surfing (European Commission, 2008).

On the base of the two dimensions - as depicted in figure 1 - four parenting styles can be distinguished.

<Insert Figure 1 about here>

We describe the four Internet parenting styles as follows:

- The permissive parenting style is reflected in parents that do not put forward explicit boundaries. They refrain from confrontations with their children. They give in to what their children ask and follow their ideas and will. They invest in parental warmth, but hardly give guidance.
- The laissez-faire parenting style is reflected by low levels of control and low level of involvement. They do not reflect a supportive or restrictive attitude towards Internet usage of their children.
- The authoritative parenting style is reflected in parents that set forward clear rules. These parents do not explicitly limit behavior, but expect their children to be responsible and behave in a self-regulated way. They rather put forward practical rules; e.g., in relation to Internet timing.
- The authoritarian parenting style is reflected in parents that ask for unconditional obedience and following rules without explanation. They hardly discuss Internet issues and are not open for dialogue about Internet access. They insist on accepting their perceptions about Internet usage.

Earlier research about parenting styles – yet not linked to Internet usage – comes to the following conclusions. According to Aunola, Stattin, and Nurmi (2000), we observe dominantly the permissive parenting style, next the authoritative and the authoritarian style. The laissez-faire style is observed least of all. Also other authors report unbalanced proportions in parenting styles (Darling, 1999; Dornbusch, Ritter, Leiderman, Roberts, & Fraleigh, 1987; Eastin et al., 2006; Kaufman, Gesten, Lucia, Salcedo, Rendina-Gobioff, and Gadd, 2000; and Rosen, 2008). These authors report a dominance of the authoritative style, followed by the authoritarian, permissive and laissez-faire style.

Available research – some related to Internet usage – also points at a number of parent characteristics that play a role and interact with parenting styles. Mothers tend to adopt mainly an authoritative style, as compared to a dominant authoritarian style of fathers (Aunola et al., 2000). The biological parents tend to adopt a stronger control attitude as compared to grandparents, foster parents, and guardians (van Rooij & van den Eijden, 2007). Also age seems to play a role. Elder parents control more and guide less than younger parents (Wang et al., 2005). Pauwels et al. (2008) add to this the impact of parent educational level. Higher educated parents control more and reflect more parental warmth. This can be mediated by Internet prior knowledge and experience of the higher educated parents. Walrave et al. (2008) and Wang et al.(2005) report that parents with a sound Internet knowledge base, and who are conscious about Internet risks, reflect different parenting behavior towards Internet usage of their children. They consider control and support to be of high importance. Parents – e.g., with a migrant background – seem to be less acquainted with this new medium and consequently mirror less control and guidance activities (Walrave et al., 2008). Lastly, the number of children in a family also affects parenting styles. In larger families, less control and support is observed in relation to Internet usage (Duimel & de Haan, 2007).

In the same way, also the characteristics of the children affect parenting styles. Girls are clearly approached differently as compared to boys. Aunola et al. (2000) concluded that daughters are rather approached in an authoritative way and sons rather via a laissez-faire approach. Parents define more rules for daughters, and there is more communication with them. This has also been observed in recent Internet related research (Van Rooij & Van Den Eijnden, 2007). Also, teenagers are controlled on the Internet to a lesser extent as compared to younger children (European Commission, 2008; Lwin et al., 2008; Valkenburg, 2002; Wang et al., 2005).

The impact of Internet parenting styles on Internet usage

It is wishful thinking to expect parenting styles to counter all Internet risks (Eastin et al., 2006). Nevertheless, some research evidence shows that parental control and parental warmth can help to develop resilience in children that understand Internet risks and adopt promising Internet usage. But – as will become clear – the research results are rather ambiguous.

Rosen (2008) states that “Research has found that parenting style is related to child Internet behavior” (p. 462). Most studies refer to types of parental control and/or parental warmth to identify successful parent interventions (Chou & Peng, 2007; Heim et al., 2007; Kerbs, 2005; Lwin et al., 2008; Valcke et al., 2007; Valcke et al., 2010.

A first study about control of Eastin et al. (2006) results in less positive findings. They state that “parenting styles did not impact time online” (p. 497). Also other researchers report less positive results. According to Lee & Chae (2007), there is no relationship between restrictive behavior of

parents and actual Internet usage of children. This is in contrast to the results reported by Valcke et al. (2007) who found that children that experience explicit parental control report less Internet risk behavior. This is confirmed by the results of Heim et al. (2007). But little research links the impact of parenting styles to the actual usage of the Internet by young children. Lwin et al. (2008) report that e.g., control results in lower levels of Internet usage.

Research about parental warmth is more conclusive. Support of parents seems to result in more safe Internet usage (Fleming et al., 2006). Support, enriched with talking about the Internet, seems to result in more educational types of Internet usage and a larger share of positive online interactive behavior (Lee & Chae, 2007). In addition, these children seem to understand to a better extent the complexity of the Internet (Lwin et al., 2008).

Integrating the theoretical and empirical base

<Insert Figure 2 about here>

In Figure 2, we integrate the available theoretical and empirical information about the relationship between (Internet) parenting styles and the use of the Internet by young children. This figure is also the base for the guiding research question of the present study that is partly exploratory in nature due to the limited amount of empirical studies currently available: what are typical Internet parental styles and how are these related to actual Internet usage of primary school children. The following research questions guided the research design:

1. To what extent is Internet access at home related to characteristics of the parents and family?
2. What Internet parenting styles are being observed?
3. To what extent are Internet parenting style dimensions related to family/parent and child characteristics?
4. To what extent is Internet usage of young children influenced by parenting styles and related family and parent characteristics?

Research Design

Sampling

In the present study, we involved parents of children enrolled in the fifth or sixth grade of primary school. The rationale to centre on this age group is linked to research findings that these children reflect already a high extent of Internet usage (Wang et al., 2005). This group of children evolves from starting Internet users to all round users (Pardoen & Pijpers, 2006). Other authors stress that from this age on children are able to work completely independent on the Internet (Valkenburg, 1997; Nikken, 2002).

All parents of fifth and sixth graders, of ten randomly chosen schools of a medium size city (+/- 150.000 inhabitants) in Flanders (Dutch speaking area of Belgium), were asked to participate in the study. In total, 1192 questionnaires were handed out. An acceptable response percentage was achieved; 43.62% of the questionnaires were returned (N = 533).

Respondents were dominantly female (61.53% female and 38.46% male parents). Most respondents are between 35-44 years old (70.50%); 45 to 54 years old (13.90%) and between 25-34 years old (13.5%). Other characteristics can be found in Table 1. In addition, we add details about the fifth and sixth graders. We also include mean scores in relation to parental control (PC) and parental warmth (PW) that will be discussed in the results section.

<Insert Table 1 about here>

Research instruments

A questionnaire was designed, consisting of three parts. A first part contained background questions about family/parent/child characteristics, in line with the variables depicted in Figure 2.
The second part of the questionnaire centered on Internet access and usage at home. Parents were asked about their level of Internet usage, their Internet experience, and attitude towards the Internet. They were also asked to quantify the usage of the Internet of their fifth or sixth grader. As to the latter, the answers to two questions are used to calculate an Internet usage index: How many days a week does your child have access to the Internet?; and How much time spends your child daily accessing the Internet? In the same way, two questions measure the extent the parent him- or herself accesses the Internet.
The third part of the questionnaire centered on their Internet parenting style. The Internet Parenting Style Instrument (IPSI) was partly based on the scale developed by van Rooij and van der Eijnden (2007) and initially scrutinized by two fifth and sixth grade teachers, and two parents. The two sub-scales in the instrument reflect the parental warmth and control variables discussed in the theoretical base (see Figure 2). A translated version of the IPSI can be found in appendix 1.
Parental control was studied via 11 Likert scale items: 4 statements about supervision, 2 statements about stopping Internet usage, and 5 statements about Internet usage rules. Parental warmth was studied via 14 Likert scale items: 11 statement about communication and 3 items about support. The Likert-scale varied from 1 (never) to 5 (always). Also the "not applicable" option was provided. In view of obtaining standardized values for both parenting style dimensions, first sum scores were calculated and next divided by the number of items for the specific scale. The standardized score for the "parental warmth" items was labeled PW. The standardized score for the "parental control" items was labeled PC.
The Internet parental style questionnaire reflects a good reliability. Cronbach's alpha of the parental warmth subscale is .90. Cronbach's alpha of the parental control subscale is .78.

Research and analysis procedure

Schools were contacted to be involved in the study. On the base of a personal discussion with the school principal, consent was obtained to set up the study via the schools. In December 2008, each child was given a research set consisting of a questionnaire and a letter for their parent(s) or guardian. The letter invited parents to fill out the questionnaire on a voluntary basis; one per family. Questionnaires were returned via the school and collected by the principal researcher.
After data entry, all research data were screened. In view of looking for answers to the research questions, descriptive and inferential statistical techniques were applied (SPPS 17). To compare differences in proportions, chi-square analysis was applied. Regression analysis was applied to study the relationship between parenting styles and actual Internet usage of the children. A p value of .05 was put forward as the significance level.

Results

To what extent is Internet access at home related to characteristics of the parents and family?

Only a minority of parents reports not to have Internet access at home (n = 43, 8.1%). In addition, 46.7% of those with Internet access also point out that Internet is available in multiple sites at home. Internet access is clearly linked to age of the parent ($\chi^2 = 17.62$, $p < .001$), educational background ($\chi^2 = 37.61$, $p < .001$), and migration status ($\chi^2 = 28.98$, $p < .001$).
Younger parents (< 34) have less access to the Internet at home. This is also true for parents with a lower educational background (primary school, and lower secondary education) and for non-Belgian parents (other or non-European countries).
There seems to be a clear relationship between Internet access at home and the age of the children ($\chi^2 = 17.12$, $p < .001$). Children of 11 or above have more Internet access at home as compared to younger children.

Having Internet access at multiple places in the home is significantly related to educational level of the parents and migrant-status. A higher educational background reflects more places at home giving access to the Internet ($\chi^2 = 24.14$, $p < .001$). The same is true for parents that originate from Belgium ($\chi^2 = 12.86$, $p < .001$). There is no relationship between multiple access at home and age level of the children or parents.

What Internet parenting styles are being observed?

Standardized values for the variable parental control and warmth range from 1 to 5. Combining both dimensions and by using the value of 3 as a cut-off, we can label parents according to a specific parenting style category. This is depicted in Figure 3.

< Figure 3 about here>

It is clear that the authoritative Internet parenting style is dominantly observed, followed by a permissive, authoritarian, and a laissez-faire Internet parenting style. In addition, a fifth parenting style category is identified in parents with a mixed Internet parenting style because they reflect a level of parental warmth/control that is around the cut-off value of 3.

It is also important to mention that there is significant, moderate positive relationship between parental control and parental warmth ($r = 0.58$, $p < .01$). Parents exerting a certain level of control, mostly adopt a warm relationship with their children, and vice versa.

To what extent are Internet parenting style dimensions related to family/parent and child characteristics?

The relationship between parenting style dimensions and parent/family characteristics

On the base of an analysis of variance, we can check whether specific family/parent characteristics are related to differences in parental control or parental warmth. An initial check of normality of the distribution and homogeneity of the variance was carried out. In Table 1, we summarized information about mean scores for PC and PW.

Firstly, gender clearly plays a significant role. An analysis of variance with gender as a factor shows that parental control differs between fathers and mothers ($F(1,489) = 3.94$; $p < .05$). Mothers control to a larger extent, and give larger guidance and support. The same is true for the dimension parental warmth ($F(1,489) = 9.05$; $p < .05$). Mothers reflect a significantly larger level of parental warmth.

Also the age level of parents results in significant differences in both parental control ($F(4,486) = 3.64$; $p < .05$) and parental warmth ($F(4,486) = 5.78$; $p < .05$). A post hoc analysis (Bonferroni multiple comparison test) reveals that parents aged between 25 to 44 years control to a larger extent than parents between 45 to 54 years. Parents aged between 25 to 44 years also reflect more parental warmth as compared to parents between 45 to 54 years.

Educational level of the parents influences parental control ($F(4,486) = 10.38$; $p < .05$) and parental warmth ($F(4,486) = 7.69$; $p < .05$). Parents with a higher secondary education, lower secondary education, or a primary education background control to a significantly lesser extent as compared to parents with a university college degree or a university background. Parents with a lower secondary education background or less reflect less parental warmth as compared to parents with a higher education background.

Parents from a smaller family do not differ in their degree of control as compared to other families ($F(5,485) = 2.21$; $p > .05$). But there is significant difference in parental warmth ($F(5,485) = 2.28$; $p < .05$). Parents of families with three children or less reflect a higher level of parental warmth as compared to families with four or five children.

Attitude towards the Internet also results in significant differences: parental control ($F(4,486) = 5.39$; $p < .05$) and parental warmth ($F(1,486) = 4.22$; $p < .05$). A relatively positive attitude towards the Internet results in more parental control as compared to parents with a less positive attitude. Parents with a rather positive attitude also express more parental warmth as compared to parents with a very positive attitude.

As expected, significant differences in parental control ($F(4,486) = 5.48$; $p < .05$) and parental warmth ($F(4,486) = 7.05$; $p < .05$) result from differences in Internet experience. Parents that can be qualified as beginners express less control as compared to parents with medium or high Internet experience. The same applies to parental warmth.

No significant differences result from the nature of the parental relationship in the level of parental control ($F(4,486) = 1.47$; $p > .05$) or parental warmth ($F(4,486) = 1.42$; $p > .05$). Also the migration status of parents does not result in significant differences in parental control ($F(2,488) = 1.19$; $p > .05$) or parental warmth ($F(2,488) = 0.01$; $p > .05$).

The relationship between parenting style and child characteristics

There is a number of significant relationships between child characteristics and the parenting style being adopted.

Being a girl or a boy does not result in differences in parental control ($F(1,489) = 2.47$; $p > .05$) or parental warmth ($F(1,489) = 2.09$; $p > .05$). This is reflected in the non-significant Chi-square analysis studying observed and expected proportions of Internet parenting styles when parents talk about a son or a daughter (X^2 (1,3) = 2.65, $p = .449$). Internet parenting styles do not differ significantly when dealing with daughters or sons.

Parental control differs significantly in relation to age ($F(4,486) = 2.82$; $p < .05$). The same is true for parental warmth ($F(4,486) = 2.81$; $p < .05$). Children of 9 to 10 years old are controlled more frequently as compared to children of 11 to 13 years old. Children of 9 to 10 receive a higher level of parental warmth than older children.

The Internet expertise level of the children influences significantly parental control ($F(4,486) = 9.23$; $p< .05$) and parental warmth ($F(4,486) = 4.22$; $p < .05$). Children considered by their parents as beginner or with medium experience are controlled to a larger extent and receive more parental warmth as compared to children qualified as skilled or expert.

To what extent is Internet usage of young children influenced by parenting styles and related family and parent characteristics?

Based on the five Internet parenting styles as a factor, an analysis of variance was computed with Internet usage of the children as the dependent variable. Significant differences are observed ($F(1,4) = 8.04$, $p < .01$); with a small effect size partial eta squared = .062. Figure 4 depicts the differential impact of the different Internet parenting styles on the level of Internet usage of the children.

<Insert Figure 4 about here>

A linear regression was computed to investigate whether parental control, parental warmth, and the family/parent background variables predict actual Internet usage of the children (see Figure 1). Parental control, parent educational background, and parent internet usage significantly predict Internet usage of the children ($F(11, 479) = 7.09$; $p < .05$). Adjusted R^2 indicates that 12% of the variance in Internet usage is explained on the base of these variables.

Next to the strong contribution of parental warmth, parental control and educational background of the parents, the following variables are also significantly related with Internet usage of the child ($p > .01$ and $p < .05$): parent Internet experience, parent Internet attitude, and parent Internet usage.

In a next step a modified regression model was considered. A number of variables is not significantly correlated with Internet usage of a child: gender of the parent, parental relation, migration status, and number of children ($p >.05$). We conclude to remove the latter variables from the regression model. Furthermore, in order to develop a sparsimonous model, we take into account the specific correlation values between the predictor variables. We propose to cluster parental control and parental warmth into the variable parenting style, considering the strong significant correlation between both variables ($r = .58$). We also suggest to bring together the three parent Internet related variables (experience, attitude, and usage) into one single variable: parent Internet behavior.

Computing the linear regression, reveals that the variables Internet parenting style, parent Internet behavior, and parent educational background significantly predict Internet usage of the child

($F(3,487) = 130.59$; $p < .05$). The adjusted regression coefficient ($R^2 = .44$) indicates that the model explains 44% of the variance in Internet usage of the child.

Discussion

Considering the exploratory nature of this study, it is not easy to contrast or study the research findings with results of the scarcely available comparable studies. This is especially the case for studies about parental warmth. More research is already available about parental control. When available, we will mirror the findings with available empirical data. By preference we build on research data from a comparable geographical context (Belgium-the Netherlands), because we expect that research results can differ according to the geographical and cultural context. Typical examples of such cultural differences have already been found in parenting styles (see Zimmerman, 2002). A second observation is needed to contextualize the research findings. Since the Internet itself and its position in society is a continuously evolving issue, we can expect that study results will differ over time, resulting in differences in research findings.

The present study reflects a high level of Internet use at home, considering the large proportion of parents that report Internet access at home. This is consistent with the finding of Valcke et al. (2007) that 91.2% of children report to have Internet access at home, or Walraeve et al. (2008) that 96.3% have Internet access. The same is true as to the finding that in more and more families, children can have access to the Internet in multiple sites (Valkenburg, 2002).

The fact that specific parent or family characteristics seem to influence Internet access at home is also consistent with the findings of earlier research. Lower Internet access in families whose parents have a migration status, or a lower educational background is consistently found in the digital divide literature (see e.g., McLaren and Zappalà, 2002). The link with age level of the parents was also found by Chakraborty and Bosman (2005).

The research results indicate that we dominantly observe an authoritative parenting style in this sample (59.3%). The unbalanced occurrence of the different parenting styles was initially already found in non-Internet related studies (see e.g., Darling, 1999; Dornbusch et al., 1987). This is also confirmed in the Internet related studies of e.g. Eastin et al. (2006), and Rosen (2008). But the dominant authoritative Internet parenting style differs from what these other researchers found: Eastin et al. (2006) reported a dominance of both the authoritarian and authoritative parenting style, and Aunola et al. (2000) reported a dominance of the authoritarian parenting style. We also have to stress the fact that in the present study, a fifth - mixed - parenting style has been identified. The key to explain these inconsistent results can be found in the particular context of the study and how culture affects parenting approaches (see e.g., Zimmerman, 2002).

Studies focusing on the parenting style dimensions and the extent to which they are related to specific parent/family characteristics were already reported in the theoretical introduction. In the literature, we especially find comparable research that focuses on parental control. For instance, Wang et al. (2005) report that fathers, younger parents, parents who use the Internet with their children, and parents with younger teens engage in a higher level of parental Internet monitoring. This is not in line with our findings. In the present study, we observe a stronger involvement of mothers in parental control and parental warmth. But, the latter is consistent with the findings of original parenting style research that concluded that mothers tend to adopt to a higher extent an authoritative parenting style (see Aunola, et al., 2000).

A striking difference is found in relation to the parent age levels and parental control. Whereas Wang et al., (2005) found that older parents tend to control to a larger extent, we find that it is rather younger parents mirroring the highest level of parental control. This finding can be related to the continuous evolution in the role and position of the Internet. This seems not to be related to differences in experience with the Internet ($F(1,4) = 1.54$; $p = .188$) or differences in Internet attitude ($F(1,4) = 2.032$; $p = .109$).

The finding that educational level of the parents influences parental control and parental warmth is consistent with results from previous studies (Walrave et al., 2008 and Wang et al., 2005). Also their explanation that this can be mediated by differences in Internet prior knowledge and experience is

confirmed. Higher educated parents reflect significantly higher levels of Internet experience.
The finding about the linear relationship between migration status and Internet parenting styles is in line with earlier findings (see e.g., Walrave et al., 2008 and Wang et al., 2005). This can – as already stated by the latter authors – be explained by significant differences in their Internet experience, Internet attitude, and Internet usage.
Inconsistent results are found as to the relationship between family size and parental control. Whereas Duimel and de Haan (2007) found a negative relationship between the number of children in a family and the level of control, this is not found in the present study.
Studies focusing on parenting style dimensions and how this is affected by child characteristics, come to rather inconsistent findings. The latter can be related to the fact that some of these studies rather build on data gathered from children and not from the parents. In line with the present findings, Valcke et al., (2007) found no significant differences in parental control between boys and girls. But their finding about no differences in parental control according to different age levels is not confirmed in the present study. We clearly observe more parental control in younger children (see also Lwin et al., 2008 and Valkenburg, 2002). The fact that we gathered data from parents can help to explain some inconsistencies in the research results. As will be discussed below, this suggests to involve in future research both parents and their children in a study.
The key research question in the present study focused on the potential impact of parenting styles on actual Internet usage of their children. We have to repeat that little research links parenting styles to the actual usage of the Internet by young children. The present results are clear. Parenting styles make a difference, and this relationship is mediated by parent educational background and their actual Internet usage. A large proportion of variance in Internet usage could be explained on the base of the predictor variables. The positive results confirm the outcomes of the studies of Fleming et al. (2006), Lee & Chae (2007), and Lwin et al. (2008).

Implications, limitations and conclusions

The findings of the present study have a number of theoretical and practical implications. At a theoretical level, the results add empirical evidence to the construct parenting styles and the extent to which the styles are influence by background variables and mediating processes. It is clear that the theoretical position of varying parenting styles is confirmed, but also amended since a fifth – mixed – parenting style could be identified. From a theoretical point of view, the present findings could also enrich future TAM research that centers on internal and external predictors of technology acceptance in youngsters. Internet parenting styles could be added as a new predictor to explain and predict Internet adoption. Practical implications are related to the role Internet education can play. Since Internet parenting styles play a role and seem to be related to Internet experience, Internet attitude and Internet usage, intervention programs could centre on the conceptions, abilities, and usage by parents. This is especially relevant when we consider in addition the educational background and the migration status of parent subgroups.
Some limitations of the present research have to be taken into account. In the present study, we adopted the perspective of parents since in most studies, children are approached for data collection. In a future study, both parent and child perspectives could be taken. This is in line with the recommendation of Wang et al. (2005): “(this) points to the need to study family rules from both parents' and children's perspectives”. Secondly, our study was based on a survey involving parents that were asked to react to sensitive questions about parenting style characteristics. These can be considered as sensitive issues and result in a certain level of bias; i.e., response patterns that reflect social desirable responses. This could be controlled for by also involving other actors in the study. Thirdly, next to survey instruments, actual Internet usage of the children can be measured in an alternative way and additional characteristics of Internet usage could be controlled for (types of use, Internet risk behavior). Lastly, the study should be replicated by involving a larger sample of parents, from different geographical regions within the country. In addition, a comparison with other countries could be helpful to control for potential cultural differences.

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Appendix 1: Translated version of the Internet Parenting Style Instrument

In the original Dutch version, items from both dimensions were mixed randomly. In this translated version both the style dimensions and subheadings are indicated.
Parents react to each individual item by indicating on the Likert-scale the extent this item is applicable to them (1 -never to 5 -always).

Parental Control

Supervision

1. I'm around when my child surfs on the Internet.
2. I watch when my child surfs on the Internet.
3. Afterwards, I control what my child watched on the Internet.
4. I use special software to block certain Internet sites for my child.

Stopping Internet usage

5. I stop my child when he/she visits a less suitable website.
6. I stop my child when I see he/she is chatting.

Internet usage rules

7. I only allow my child to surf the Internet at specific days and times (e.g., only Wednesday afternoon).
8. I limit the time my child is allowed in the Internet (e.g., only one hour a day).
9. I limit what my child is allowed to do on the Internet (e.g., no chatting allowed).
10. I limit the type of websites my child is allowed to visit.
11. I determine that my child can only contact people via the Internet they already know personally.

Parental Warmth

Communication

12. I define Internet rules together with my child.
13. I explain Internet rules together to my child.
14. I discuss with my child about what he/she has found, or will find on the Internet.
15. I talk with my child about what he/she does on the Internet.
16. I talk with my child about whom he/she meets via the Internet.
17. I talk with my child about the rich possibilities of the Internet (looking up information, playing games, contacting friends, …).
18. I talk with my child about the dangers related to the Internet (costs, addiction to games, computer viruses, privacy violation, …).
19. I listen to what my child tells me about what he/she did on the Internet.
20. My child asks me questions when he/she encounters technical problems when surfing the Internet.
21. My child asks me questions when he/she is surprised or shocked about things he/she has seen on the Internet.
22. My child asks me questions when he/she doesn't understand things on the Internet (difficult words, foreign language, difficult procedures, …)

Support

23. I sit together with my child at the computer to surf on the Internet.
24. I show my child how to surf safely on the Internet.
25. I show my child "child friendly" websites (library, songs, crafts, school website, …).