

**Attitudes of adolescents' parents towards computer technology
and strategies of parental regulation in Greece.**

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Thessaloniki, 2009

1. Introduction

Every time that a technological innovation appears, for example the television or the radio, also appear debates on the effects of this new technology, especially on youth (Wartella & Reeves, 1985). To this adds the high research concern to study and record this phenomenon (e.g. Haddon 2006` Livingstone, 2000, 2007 `Venkatesh, Morris, Davis & Davis, 2003).

The personal computer (PC) constitutes today's technological innovation and its penetration into every day life is already a fact. For example, regarding the country of Greece and according to the European research Special Eurobarometer (2008), 41% own at least one personal computer and indeed the main majority concerns families with children. This fact may reflect the parental trend to support that their children need to be experts on PC and internet use, so as to be able to evolve in their lives (Nixon, 1997`Soeters & van Schaik, 2006). Moreover, some percentages indicate that adolescent boys of high educational and socio-economic background demonstrate the most improvident and at risk use (Kraut et al., 1996`Subrahmanyam et al., 2001`Wartella & Jennings, 2000).

Thus, the PC penetration is accompanied by a confusion regarding the nature of this new technological equipment, the advantages that its use offers to children, the place that has inside the house and the family and finally the way in which it can be used properly (Livingstone & Bovill, 2001).

Furthermore, the existence of the "digital divide" has provoked a lot of research interest as in its investigation some other factors seem to involve, like the factor of sex, age, place of residence, as well as the factors of educational and socio-economic status (Anderson et al., 1999`Wilson et al., 2003`Shelley et al., 2004). The "digital divide" is actually used to describe the observed gap between the persons that seem to profit from the use of computer technology and those that seem to be indifferent (Wilson et al., 2003).

Taking into consideration all the above, the relationship between PCs and people seems to be interactive. In other words, people may determine the place and the actual use of computers, but in the same time personal computers shape their experiences (Leung, 2003`Silverstone, 2005). Furthermore, it seems that the adopted attitudes towards computer technology play an important role in this relationship.

Parental attitudes towards Personal Computers

The understanding of attitudes towards computers is of great importance as it seems that they influence not only the initial adoption of Information and Communication Technology, but also the future behavior of people towards computers (Ajzen, 1991`Selwyn, 1997`Taylor & Todd, 1995).

So, the term attitudes towards personal computers, refers to the degree to which a person has a favorable or an unfavorable evaluation or appraisal of the behavior in question (Ajzen & Fishbein, 1980). As research-based evidence indicates, the more a person uses a computer, the more he/she familiarizes with its actual use experience, achieving a higher capacity of use and perceived self-efficacy, which in turn leads to the adoption of more favorable attitudes towards PC (Guttek et al., 1998`Kay, 1993`Matthieson, 1991`Taylor & Todd, 1995).

Gender, also, has an important role in the process of forming attitudes towards PCs. According to many researches, men and boys hold more positive attitudes towards personal computers than women and girls (Collis & Williams, 1987`Durndell et al., 1997` Giacuinta et al., 1997`Houser & Garvey, 1985` Shashaani, 1993).

Parents, on the other hand, act as principal agents of children's socialization, as they are able to transfer their own attitudes and beliefs in their children, through their counselling and guidance to engage in specific activities, as well as through the occasions that provide their children with (Shashaani and Kahlili, 2001`Sutherland et al., 2000). Therefore, the investigation of parental attitudes towards this technological innovation emerges.

Parental Mediation

As far as the actual use of personal computers is concerned, it seems that parents perceive themselves as less capable than their children (Eastin et al., 2006`Livingstone & Bober, 2003). So, the challenge that parents face now days lies in finding a model of use, that will promote the advantages while minimizing the possible unwanted effects of using personal computers, although they themselves admit that their children are more experienced in this field than them.

Such an attempt is made through the strategies that parents usually adopt in order to regulate media use. These strategies can be discriminated into three styles:

- the active mediation which refers to the intentional discussion and negotiation over the child's experiences on the PC,
- the restrictive mediation which involves the rule setting on the total amount of time spent in front of the PC and on the actual type of use, and finally
- the mediation of covieing, which takes place when parents and children exchange opinions but regarding only the know-how of the use and not the content or the evaluation of the experiences (Austin, 1993`Buijzen & Valkenburg, 2005`Eastin et al., 2006` Nathanson, 1999`Livingstone, 2007`Valkenburg et al., 1999).

Relative research indicates that some socio-demographic factors seem to relate with the adopted strategies of regulation. More specific, as the educational and socio-economic parental status increases, also increases the parental concern and interest on the children's developmental needs, as well as their educational achievement and consequently parents tend to spent more quality time with them through the strategy of active mediation (Giacquinta et al., 1995` Shelley et al., 2004`Yeung et al., 2001).

Furthermore, it seems that parents choose the every time appropriate strategy of regulation, based on their own feelings, needs and preferences than the ones of their children (Henry et al., 1996`Nathanson, 2001). In other words, in the process of choosing the regulating strategy, parental attitudes do interfere. For example, Nathanson (2001) in her research found out that parents adopted the restrictive type of mediation more often when they themselves held negative or unfavorable attitudes towards those activities or programs.

2. Methodology

The present research comes to fill the gap, which is observed in bibliography in reference with the way the computer penetration affects parents. More specifically the present study aimed to investigate

- the attitudes of adolescents' parents towards personal computers
- the strategies that parents adopt in order to regulate computer use, and finally
- the parental attitudes' possible effect on the adoption of regulating strategies.

The sample consisted of 394 Greek adolescents' parents (155 men and 238 women) from different Greek cities and namely from big cities (Athens ,Thessaloniki), from provincial towns (Kozani, Volos, Trikala) and from different rural areas (small towns and villages), who completed a series of anonymous, closed-type questionnaires.

Regarding the investigation of parental attitudes, the questionnaire of Brown and Venkatseh (2005), Model of Adoption of Technology in Households (MATH) was used. This tool consists of 44 items in which the participants respond in a seven grade Likert scale. After the pilot study and according to the research interest, only 26 items were finally administrated.

In order to investigate the strategies of parental regulation a Scale to Assess Personal Computer Mediation was developed in reliance with Valkenburg et al., (1999) Scale to assess TV mediation. The validity and reliability scores of both questionnaires were more than satisfactory (see Table 1 and 2).

Table 1. Factor analysis and Cronbach's alpha of the MATH scale.

	Factor 1	Factor 2	Factor 3	Factor 4	Factor 5	Factor 6	Factor 7
Applications for personal use (alpha=.71)							
1. I find that the computer has tools for personal productivity	.53						
2. I find that the computer has tools to support household activities	.85						
3. The computer has software that helps with the activities in the house	.81						
Utility for children (alpha=.83)							
4. The computer provides applications that my kid(s) can use		.83					
5. The computer has useful software for my child (or children)		.86					
6. I find the computer to be a useful tool for my child (or children)		.81					
Utility for work-related use (alpha=.88)							
7. The computer is useful for me to work-at-home			.84				
8. The computer provides applications related to my job			.84				
9. I am able to work at home more effectively because of software on my computer			.85				

	Factor 1	Factor 2	Factor 3	Factor 4	Factor 5	Factor 6	Factor 7
Applications for fun(alpha=.85)							
10. The computer provides many applications that are enjoyable				.72			
11. I enjoy playing computer games				.82			
12. My computer has applications that are fun				.87			
13. I am able to use my computer to have fun				.82			
Status gains (alpha=.91)							
14. People who use a computer at home have more prestige than those who do not					.91		
15. People who use a computer at home have a high profile					.95		
16. Using a computer is a status symbol					.89		
Fear of technological change (alpha=.66)							
17. The trends in technological advancement are worrisome to me						.85	
18. I fear that today's best home PC will be obsolete fairly soon						.54	
19. I am worried about the rapid advances in computer technology						.87	
Perceived ease of use and self-efficacy (alpha=.90)							
20. My interaction with a computer is clear and understandable							.69
21. Interacting with a computer does not require a lot of my mental effort							.70
22. I find a computer to be easy to use							.81
23. I find it easy to get a computer to do what I want it to do							.85
24. I feel comfortable using a computer on my own							.86
25. If I wanted it to, I could easily operate a computer on my own							.76
26. I can use a computer even if no one is around to help me							.76

Table 2. Factor analysis and Cronbach's alpha of the Scale to Assess Personal Computer Mediation

How often do you	Παράγοντας 1	Παράγοντας 2	Παράγοντας 3
Active Mediation (alpha=.73)			
1. try to help the child understand what he/she sees on the computer?	.59		
2. point out why some things the child sees on the PC are good?	.68		
3. point out why some things the child sees on the PC are bad?	.65		
4. explain the motives of PC use?	.72		
5. explain what something on PC really means?	.68		
Restrictive Mediation (alpha=.80)			
6. say to your child to turn off the PC when he/she is using an unsuitable program?		.60	
7. set specific PC use hours for your children?		.80	
8. forbid your child to use certain programs?		.80	
9. restrict the amount of child using the PC?		.79	
10. specify in advance the programs that may be used?		.68	
Coviewing (alpha=.90)			
11. use the PC together with your child because you both like a program?			.84
12. use the PC together with your child because of a common interest in a program?			.85
13. use the PC together with your child just for fun?			.85
14. use your favorite program together?			.88
15. laugh with your child about the things you see on the PC?			.72

3. Results

Parental attitudes towards PCs and socio-demographic factors

To investigate the effects of certain socio-demographic factors on parental attitudes towards PCs Multivariate Analysis of Variance (MANOVA) was used. The following demographic factors have no significant effect on parental attitudes.

Sex: Pillai's Trace= 0,030, $F(7,366)=1,600, p=0,134$, Age: Pillai's Trace= 0,014, $F(7,367)=0,732, p=0,645$, Children's sex: Pillai's Trace= 0,055, $F(14,720)=1,463, p=0,119$, Children's age: Pillai's Trace= 0,114, $F(14,494)=2,133, p=0,009$, Family status: Pillai's Trace= 0,011, $F(7,367)=0,589, p=0,765$, Residential area: Pillai's Trace= 0,023, $F(7,367)=1,213, p=0,765$.

Combining these data, it seems that parents of all ages and from both sexes are similarly excited about their children's use of personal computers, independent from the children's sex and age and irrespectively of the family status (if they were part of a nuclear family or had only one parent) and of the area in which they lived (rural, suburban, etc.). This result is in consistence with previous researches which propose that parents face computer technology as a positive evolution for their children's life and achievement (Soeters & van Schaik, 2006`Subrahmanyam et al., 2001).

Moreover, the failure of the present research in locating any differences on parental attitudes depending on parental age and residual area places the existence of the 'digital divide' in question, as far as these specific demographic factors are concerned (Anderson et al., 1999`Wilson et al., 2003`Shelley et al., 2004).

On the other hand, this research revealed a significant interaction between parents' educational and socio-economic status and parental attitudes towards personal computers. Educational level: Pillai's Trace= 0,214, $F(14,734)=6,290, p=0,000$, Maternal socio-economic status: Pillai's Trace= 0,171, $F(14,730)=4,888, p=0,000$ and Paternal socio-economic status: Pillai's Trace= 0,193, $F(14,716)=5,448, p=0,000$. These results verify the interactive relationship that previous researches also proposed, as it seems that in the procedure of attitudes' adoption certain demographic factors intervene (Guttek et al., 1998`Kay, 1993`Matthieson, 1991`Shelley et al., 2004`Taylor & Todd, 1995).

Indicatively, regarding parents' educational level effect, it is demonstrated that the higher the educational level, the more actual use takes place through applications for personal or work-related use and as a result parents tend to feel more efficient in personals computer use (see Table 3).

Parental mediation and socio-demographic factors

Moving on and in relation with the adopted strategies of parental regulation, it is obvious that parental sex and educational level, as well as fathers' socio-economic status have no significant effect. Sex: Pillai's Trace= 0,010, $F(3,383)=1,350, p=0,258$, Educational level: Pillai's Trace= 0,014, $F(6,768)=0,879, p=0,509$, and Paternal socio-economic status: Pillai's Trace= 0,029, $F(6,752)=1,818, p=0,093$.

Table 3.Means and standard deviations of parental attitudes towards PCs with regard to their educational level.

Parental Attitudes	Educational level							
	Basic		Secondary		Tertiary		F	<i>p</i>
	M.	S.D.	M.	S.D.	M.	S.D.		
Applications for personal use	13,13	3,83	12,83	4,34	13,96	4,13	3,241	0,040
Applications for work-related use	11,64	6,08	13,29	5,98	16,83	4,36	26,926	0,000
Perceived ease of use and self- efficacy	29,39	7,54	33,77	10,31	36,93	9,24	10,685	0,000

Taking the relevant bibliography into account we would normally expect that parents of higher educational and socio-economic status would engage more often in the strategy of active mediation (Giacquinta et al., 1995; Shelley et al., 2004; Yeung et al., 2001). The results of the present study verify this tendency, only when the socio-economic status of the mother is concerned but with a different mode (see Table 4). More specific, in the families where the mother's socio-economic status is low, parents tend to adopt more frequent the strategy of active mediation than in families where mothers' socio-economic status is medium or high. This tendency can be better interpreted and understood when taking into account the nature of the mothers' occupation.

Table 4. Means and standard deviations of the active mediation as a regulating strategy with regard to maternal socio-economic status

Regulating strategy of	Maternal socio-economic status							
Active Mediation	Low		Medium		High			
	M.	S.D.	M.	S.D.	M.	S.D.	F	P
	10,22	3,63	9,08	3,09	9,31	3,66	3,875	0,022

Parental attitudes towards Personal Computers and parental strategies of Mediation

In this section, the results are in accordance with existing relevant researches, as they elect the effect of parental attitudes towards computer technology on the adoption of regulating strategies. But this effect regards only some factors of the attitudes scale and varies in respect with the chosen strategy. More specific, active and restrictive mediation have a positive relation to «utility for children», $B= 0,129$, $t=2,129$, $p=0,034$ and $B= 0,214$, $t=3,851$, $p=0,004$ respectively, while Coviewing has a negative relation to «applications for fun», $B=-0,297$, $t=-9,335$ and $p=0,000$.

In an attempt to interpret the above, it seems that when parents find that the personal computer is a tool useful to their children, they tend to prefer the active as well as the restrictive regulation strategy. The just mentioned dual relationship is better understood if we take into consideration the actual type of use in which children engage. So, hypothetically, if a child studies using the internet, a type of use that is

positive evaluated by parents, their tendency to adopt active mediation so as to help their son/daughter and to provide him/her with everything they can seems reasonable. On the opposite, when a child uses the computer in order to play games for example, a type of use that provokes dissatisfaction and concern, the adoption of restrictive mediation fits better (Henry et al., 1996`Livingstone & Bovill, 2001` Mesch , 2003` Nathanson, 2001).

Finally, the discovery of negative relation between coviewing and “applications for fun” comes to support the research of Livingstone and Bovill (2001), according to which parents engage in computer activities, mainly to regulate the use and not to share the experience with their children.

4. Conclusion

To conclude with, the present research revealed that: Teenagers’ parents tend to believe that Information and Communication technology consists a great and positive evolution for their children’s educational and vocational evolution and achievement, as they evaluate high the use of PCs, although that when computers actually penetrate their lives a tendency to intervene and regulate their use emerges.

Also the results showed that parents’ personal attitudes have an impact on the procedure of choosing the appropriate regulating strategy so, it seems to be essential for Greek parents to familiarize more themselves with the use of ICT, in order to benefit from the advantages and to be able to choose the most appropriate regulating strategy.

5. References

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