

Electronic Media's Influence on Elementary School Children's QOL: Internet Survey of Their Mothers

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This study examines how elementary school children's use of electronic media influenced their quality of life (QOL). For this purpose, 2406 mothers of elementary school children responded to the survey on two different occasions.

Using an online questionnaire, the mothers answered questions regarding their gross household income, the number of hours their children used electronic media, and their children's QOL. Questions on electronic media use included the amount of time their children spent using electronic media on weekdays and weekends, the children's attitudes toward electronic media, and parental mediation. The results of this study implied that the amount of time spent on electronic media had little influence on most of the children. Rather, limiting the contents and the time that their children used electronic media and viewing the electronic media together with their children (covieing) affected their children's QOL.

Key words: electronic media, QOL, SES, parental mediation, panel study

Recently, increasing attention has been paid to the mental enrichment of children, in addition to materialistic enrichment. Many researchers focus on quality of life (QOL) because QOL includes many aspects of psychological and physical health. QOL is a concept that subjectively and objectively describes the physical, social, and psychological conditions of a person. It is also a summary of the multi-dimensional factors of degree of satisfaction in health and life. Researchers have created some scales that examine children's QOL. The previous literature on QOL generally focused on children with chronic illnesses. Ravens & Bullinger (1998) defined QOL as the subjective physical and mental health and satisfaction of life in general. They developed the Kid-KINDL scale, which objectively examines QOL. This scale evaluates the QOL of children between the ages of 7

and 16. This inclusive and user-friendly scale examines physical and mental health and adjustment at places where children spend their daily lives (e.g., school and home). The scale consists of six subscales (i.e., physical health, emotional well-being, self-esteem, family, friends, and school). Shibata et al. (2003) created a Japanese version of this scale, which has proven to be both valid and reliable.

Research using the Japanese version of the Kid-KINDL[®] suggests that Japanese children's QOL deteriorates as they advance in their academic grades, that there is no significant gender difference in their total scores, and that Japanese children score lower on the subscale of "self-esteem" than their international counterparts (review; Furusho, 2007).

It is imperative to investigate what factors con-

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tribute to children's QOL in order to clarify what adults can do to help children become psychologically healthier and happier.

Previous research suggested that socio-economic status (SES) and parental attitude are related to children's QOL. Household income and QOL demonstrated consistent correlation (Furusho, 2007). Another study implied that accumulated positive daily experience improves satisfaction with life (McCullough, Huebner, and Laughlin, 2000). For example, daily events (e.g., conversation with a friend) predicted QOL more than significant but infrequent life events (e.g., a parent's remarriage) did (McCullough et al., 2000). Hence, daily experience that accumulates over time is closely related to QOL.

The present study focused on electronic media such as television and video games that children of modern times frequently use. A study by Benesse Corporation (2010) indicated that elementary school children in Japan watched television an average of two hours per day on weekdays and weekends. Similarly, these children played video games for one hour per day on weekdays and weekends (Benesse Corporation, 2010). This data suggested that electronic media is a part of contemporary children's daily lives. It is thus inappropriate to discuss a contemporary Japanese child's life and development without considering electronic media.

As electronic media spread widely, people discussed its effect on child development. The majority of people used to focus on its negative influences. Electronic media, however, began to gain attention for its positive influence on interpersonal relationships. The degree to which children become aggressive or social does not depend on the length of time children use electronic media, but rather on the context of electronic media use (i.e., how and with whom children experience the contents of the media). For example, at times watching a violent scene increases aggression in children, and at other times it does not. It is imperative to learn how to reduce negative influences and increase positive influences rather than discussing the mere presence or absence of electronic media's influence on children.

How does parental mediation affect children's electronic media use? Little research has examined how parents' daily mediation affects their children's development. Valkenburg, Krcmar, Peeters, and Marseille (1999) summarized parental instruction on television viewing using three categories: instructive mediation (the process of discussing certain aspects of programs with children), restrictive mediation (parents setting rules or prohibiting the viewing of certain content), and social covieing (sharing the viewing experience but not engaging in any discussion about program). Shibuya, Sakamoto, Ihori, & Yukawa (2010) used the concepts of Valkenburg et al. (1999) to analyze how parental discipline regarding video games mediates their children's aggression. Some studies noted that parents' SES impacts children's electronic media use (Benesse Corporation, 2009b). Therefore, SES should be considered when analyzing electronic media's influence.

Hence, this study investigated how electronic media influenced children's QOL. Though literature suggested that SES impacted children's QOL and their use of electronic media, very few studies analyzed all three factors (SES, electronic media use, and QOL) simultaneously. This study investigated SES, electronic media use, and QOL; it also analyzed the influence of electronic media use on children's QOL through questionnaires conducted on two different occasions. A panel study involves conducting the same survey of the same target multiple times with a certain interval. While a survey at one set reveals only correlation, multiple surveys enable the assumption of causal connection.

This study targeted the behavior of elementary school children because they use electronic media for an extended length of time and could be easily influenced by such media. Participants for this study were mothers who had registered for an online survey service. This recruitment method was chosen in order to include people of a variety of ages in the study. Mothers of elementary school children evaluated their children's electronic media use because elementary school children were unlikely to have adequate metacognition neces-

sary for answering questions for this study.

Participants

The participants were 2406 mothers of elementary school children ($m=37.78$ years, $SD=4.49$). They answered questions on the survey twice at different times. They were recruited through an online survey service. Mothers of elementary school children were specifically targeted. The recruiting announcement instructed them to answer questions regarding their first child if they had multiple children. Among the mothers who took the first survey, 86.5% participated in the second set. The proportions of place of residence, occupation, level of education, and type of residence and child's gender/grade are indicated in Table 1.

Procedures

Participants answered the same set of online questions on two occasions. The first survey was conducted in March 2009, the second in May 2009.

Contents of the Survey

Questions on SES included: (1) the mother's age, (2) the place of residence, (3) the mother and the father's occupations, (4) the mother and the father's levels of education, (5) the type of housing, and (6) the gross household income. Participants were grouped as low income when their household income was less than 4 million yen, medium income when it was more than 4 million yen and less than 10 million yen, and high income when it was more than 10 million yen.

Questions on the child included: (7) the child's grade level and (8) the child's gender. They were divided into three groups based on the first survey: first- and second-grade children, third- and fourth-grade children, and fifth- and sixth-grade children. It should be noted that the sixth-grade children in the first survey were in the first year of junior high school by the time of the second survey.

Questions on electronic media use included: 9) the length of time the child viewed television or used video games on weekdays and weekends

(seven choices varying from "very little" to "five hours or more"), (10) the child's television viewing habits or video game playing habits (four questions such as "watches television only for a set amount of time" and "watches television alone" with four answer choices varying from "not true" to "true"), (11) parental mediation (four questions such as "talk to your child about what he/she is watching" and "decide when or which programs your child may watch" with five answer choices varying from "never" to "always"). Questions on (10) and (11) were created based on an existing survey (e.g., Benesse Corporation, 2009a, 2010). Children's QOL: This study employed the parental scale of the Kid-KINDL[®] Questionnaire by Shibata et al. (2003). This scale consists of six subscales (physical, emotional, self-esteem, family, friends, and school). The scores were calculated such that a full score was represented by 100 points. The formula is as follows.

Sub-scales transformed to 100 =

$$\frac{(\text{Sub-scale score}) - (\text{lowest possible score})}{(\text{Possible range of raw score})} \times 100$$

The questionnaire also included questions on genre and contents of electronic media, parental values toward electronic media, daily lives, and Internet use through mobile phone and computer. Since these questions were not used for this study, they will not be discussed in detail here.

METHODS

Figure 1 depicts the model of analysis that was used to investigate the correlations among gross household income, electronic media use, and QOL from two sets of a questionnaire. Statistical software AMOS 17.0 was used. The QOL scores

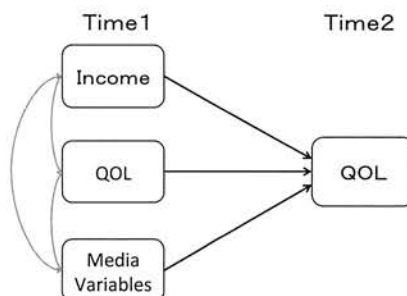


Fig. 1. Analysis model.

Table 2. Proportions of the length of time

		Income groups (Time 1)						Income groups (Time 2)					
		Low (N= 501)		Middle (N= 1228)		High (N= 677)		Low (N= 501)		Middle (N= 1228)		High (N= 677)	
Television													
On week days													
a. Very little	8	1.6%	31	2.5%	41	6.1%	12	2.4%	31	2.5%	55	8.1%	
b. 30 minutes	26	5.2%	76	6.2%	87	12.9%	29	5.8%	98	8.0%	88	13.0%	
c. 1 hour	107	21.4%	349	28.4%	207	30.6%	121	24.2%	375	30.5%	221	32.6%	
d. 2 hours	182	36.3%	454	37.0%	221	32.6%	169	33.7%	424	34.5%	219	32.3%	
e. 3 hours	104	20.8%	182	14.8%	76	11.2%	90	18.0%	167	13.6%	68	10.0%	
f. 4 hours	38	7.6%	68	5.5%	13	1.9%	32	6.4%	66	5.4%	17	2.5%	
g. Five hours or more	36	7.2%	68	5.5%	32	4.7%	48	9.6%	67	5.5%	9	1.3%	
On weekends													
a. Very little	9	1.8%	13	1.1%	13	1.9%	8	1.6%	13	1.1%	20	3.0%	
b. 30 minutes	7	1.4%	11	0.9%	27	4.0%	5	1.0%	20	1.6%	22	3.2%	
c. 1 hour	39	7.8%	157	12.8%	120	17.7%	59	11.8%	158	12.9%	128	18.9%	
d. 2 hours	122	24.4%	370	30.1%	229	33.8%	127	25.3%	397	32.3%	236	34.9%	
e. 3 hours	137	27.3%	300	24.4%	148	21.9%	129	25.7%	307	25.0%	169	25.0%	
f. 4 hours	89	17.8%	210	17.1%	81	12.0%	75	15.0%	192	15.6%	62	9.2%	
g. Five hours or more	98	19.6%	167	13.6%	59	8.7%	98	19.6%	141	11.5%	40	5.9%	
Video games													
On weeks days													
a. Very little	173	34.5%	327	30.3%	289	42.7%	188	37.5%	458	37.3%	318	47.0%	
b. 30 minutes	106	21.2%	374	30.5%	203	30.0%	100	20.0%	353	28.7%	194	28.7%	
c. 1 hour	126	25.1%	333	27.1%	128	18.9%	132	26.3%	304	24.8%	114	16.8%	
d. 2 hours	62	12.4%	107	8.7%	36	5.3%	51	10.2%	74	6.0%	36	5.3%	
e. 3 hours	21	4.2%	21	1.7%	10	1.5%	15	3.0%	25	2.0%	7	1.0%	
f. 4 hours	5	1.0%	10	0.8%	4	0.6%	5	1.0%	5	0.4%	4	0.6%	
g. Five hours or more	8	1.6%	11	0.9%	7	1.0%	10	2.0%	9	0.7%	4	0.6%	
On weekends													
a. Very little	121	24.2%	234	19.1%	169	25.0%	132	26.3%	267	21.7%	197	29.1%	
b. 30 minutes	72	14.4%	235	19.1%	158	23.3%	72	14.4%	265	21.6%	179	26.4%	
c. 1 hour	125	25.0%	361	29.4%	205	30.3%	127	25.3%	363	29.6%	168	24.8%	
d. 2 hours	90	18.0%	238	19.4%	88	13.0%	79	15.8%	207	16.9%	77	11.4%	
e. 3 hours	50	10.0%	88	7.2%	33	4.9%	51	10.2%	79	6.4%	39	5.8%	
f. 4 hours	20	4.0%	45	3.7%	14	2.1%	14	2.8%	31	2.5%	9	1.3%	
g. Five hurs or more	23	4.6%	27	2.2%	10	1.5%	26	5.2%	16	1.3%	8	1.2%	

from the questionnaire in the first set were controlled. The researchers then analyzed how household income and electronic media variables influenced the QOL scores from the second set. Electronic media variables included (1) the length of electronic media use on weekdays and weekends, (2) the child's television viewing habits or video game playing habits, and (3) parental mediation.

RESULTS AND DISCUSSION

Children's electronic media use and QOL

Children were categorized into three groups, depending on their parents' gross household income. Table 2 indicates the length of time children viewed television and played video games on weekdays and weekends. Table 3 presents the average score of the child's viewing/playing habits, parental mediation, and the child's QOL. Most children watched television one to two hours per day on weekdays, and two to three hours on

Table 3. Means (and standard deviations) for media variables and QOL

	Income groups (Time 1)			Income groups (Time 2)		
	Low (N=501)	Middle (N=1228)	High (N=677)	Low (N=501)	Middle (N=1228)	High (N=677)
Television						
The child's television habits						
a. My child watches TV only for a set amount of time	2.82 (0.81)	2.90 (0.76)	2.98 (0.76)	2.89 (0.79)	2.94 (0.74)	2.94 (0.78)
b. My child doesn't watch anything after the program he/she wanted to watch is over	2.50 (0.94)	2.62 (0.92)	2.80 (0.92)	2.59 (0.91)	2.65 (0.92)	2.77 (0.94)
c. My child gets totally absorbed in TV	3.34 (0.76)	3.34 (0.74)	3.32 (0.76)	3.43 (0.69)	3.33 (0.74)	3.30 (0.75)
d. My child often watches TV alone	1.94 (0.86)	1.82 (0.75)	1.91 (0.83)	1.95 (0.83)	1.87 (0.79)	1.95 (0.81)
Parental mediation						
a. Talk with your child about what he/she is watching	2.36 (0.71)	2.46 (0.70)	2.49 (0.74)	2.42 (0.71)	2.47 (0.70)	2.51 (0.72)
b. Change the channel or otherwise restrict your child from watching a program you do not want him/her to watch	2.27 (0.91)	2.28 (0.88)	2.41 (0.92)	2.24 (0.88)	2.26 (0.90)	2.40 (0.95)
c. Decide when or which programs your child may watch	2.33 (0.90)	2.56 (0.92)	2.71 (0.89)	2.42 (0.89)	2.55 (0.89)	2.69 (0.91)
d. Watch television together with your child	2.76 (0.78)	2.83 (0.74)	2.73 (0.76)	2.77 (0.77)	2.76 (0.74)	2.70 (0.76)
Video games						
The child's video games playing habits						
a. My child plays only for a set amount of time	2.54 (1.09)	2.64 (1.00)	2.63 (1.06)	2.54 (1.06)	2.68 (1.01)	2.65 (1.05)
b. My child decides what level he/she wants to clear and doesn't play after that	2.32 (1.05)	2.44 (1.05)	2.56 (1.07)	2.38 (1.01)	2.52 (1.02)	2.53 (1.07)
c. My child can get totally absorbed in playing	3.00 (1.05)	3.10 (0.95)	3.03 (1.01)	3.04 (1.03)	3.07 (0.95)	2.95 (1.00)
d. My child often plays alone	2.45 (1.01)	2.50 (0.97)	2.46 (1.01)	2.53 (1.05)	2.51 (0.98)	2.46 (0.98)
Parental mediation						
a. Talk with your child about what he/she is playing	2.04 (0.79)	2.09 (0.79)	2.01 (0.82)	2.03 (0.81)	2.08 (0.83)	1.99 (0.79)
b. Withhold games you do not want your child to play	2.79 (1.18)	3.01 (1.10)	3.00 (1.12)	2.74 (1.17)	2.96 (1.12)	2.95 (1.15)
c. Decide when or which games your child may play	2.49 (1.05)	2.60 (1.02)	2.67 (1.06)	2.42 (1.06)	2.56 (1.04)	2.66 (1.07)
d. Play games together with your child	1.85 (0.83)	1.88 (0.75)	1.83 (0.78)	1.81 (0.78)	1.86 (0.78)	1.79 (0.76)
Children's QOL	70.93 (11.69)	73.89 (10.39)	74.22 (11.76)	71.47 (12.12)	73.82 (10.39)	74.34 (11.44)

weekends. Children tended to "get totally absorbed" but did not tend to "watch television alone." Children played video games "very little" or "30 minutes to an hour" on weekdays and weekends. Children tended to "get absorbed" and parents did not tend to "play video games" with their children.

The average score of the children's QOL in this study was somewhat higher than their counterparts in the study by Shibata et al. (2003). Similar to the literature, a higher the gross household income yielded a higher QOL score.

Analysis of causal relationships

The correlation with the second set of QOL scores from the gross household income for both television and video games was not significant. The correlation between the first set of QOL scores and the second set of QOL scores was significant. The correlation with the second set of QOL scores from electronic media variables was significant for some variables (Table 4).

Very little relationship was found between the length of time viewing television or playing video games on weekdays and weekends, and the second set of QOL scores. However, the child's television viewing habits or playing habits and pa-

Table 4. Standardised partial regression coefficient (only statistically significant scores)

	QOL	Media variables
Television		
The length of time child viewing		
On week days	.74***	
On weekends	.74***	
The child's television viewing habits		
a. My child watches TV only for a set amount of time. (R)	.74***	
b. My child doesn't watch anything after the program he/she wanted to watch is over. (R)	.74***	
c. My child gets totally absorbed in TV. (R)*	.74***	
d. My child often watches TV alone. (S)*	.73***	-.05***
Parental mediation		
a. Talk with your child about what he/she is watching. (I)	.72***	.07***
b. Change the channel or otherwise restrict your child from watching a program you do not want him/her to watch. (R)	.74***	
c. Decide when or which programs your child may watch. (R)	.73***	
d. Watch television together with your child. (I)	.73***	.06***
Video games		
The length of time child playing		
On week days	.74***	-.03*
On weekends	.74***	
The child's video games playing habits		
a. My child plays only for a set amount of time. (R)	.73***	.03*
b. My child decides what level he/she wants to clear and doesn't play after that. (R)	.74***	
c. My child can get totally absorbed in playing. (R)*	.74***	
d. My child often plays alone. (S)*	.73***	-.04**
Parental mediation		
a. Talk with your child about what he/she is playing. (I)	.73***	.05***
b. Withhold games you do not want your child to play. (R)	.73***	.03*
c. Decide when or which games your child may play. (R)	.73***	.04*
d. Play games together with your child. (S)	.74***	.04**

1) $r(\text{QOL1-Income}) = 0.96$, $r(\text{QOL-Media Variables}) = -0.21 - 0.23$, $r(\text{Income-Media Variables}) = -0.18 - 0.14$.

2) $R^2 = 0.55$.

3) *** $p < .001$, ** $p < .01$, * $p < .05$, † $p < .10$.

4) I: instructive mediation, R: restrictive mediation, S: social coviewing.

5) *: reverse scoring.

rental mediation indicated a small but significant relationship in the second set of QOL. Restrictive mediation (e.g., limiting the time and contents) improved QOL. When children "got absorbed" and received little control, the QOL was lower. In terms of instructive mediation, parents' discussion of the contents with their children improved QOL. Social coviewing improved QOL, whereas viewing television or playing video games alone lowered children's QOL. This result indicated that children's QOL is influenced by parental mediation of electronic media use. Parent-child interaction on electronic media (e.g., discussing the contents, and limiting the time and contents)

influenced QOL. We believe the correlation between media variables and QOL was low for two reasons. First, measurements of single items tended to be influenced by errors. Second, the two-month research period was short.

Past studies on electronic media influence emphasized the characteristics of images, the length of time spent on images, the type of people with whom such exposure occurred, and under what circumstances such exposure occurred. Talking with a child about media and sharing the viewing/playing experience were also important in QOL. Television and video games are certainly attractive to children. Benesse's survey (2009a) in-

licated that as many as 80% of elementary school students answered that they liked video games. However, it is assumed that the degree of satisfaction is enhanced by sharing enjoyment of electronic media with others, rather than assuming that enjoyment of electronic media directly influences the degree of one's satisfaction in life. Limiting the contents and the amount of time that children use electronic media affected their QOL. Therefore, it is considered important that parents and children use electronic media in a positive manner (known as media literacy development) in order to improve children's QOL, rather than using convenient and interesting electronic media.

This study was not without some limitations. It did not clarify whether general parenting or parenting specifically about electronic media use affected QOL. Future studies should compare general parenting and parenting specifically about electronic media use, and investigate how parenting regarding electronic media use affects children's QOL. This research did not fully investigate parental mediation. Only the amount of time and the contents of the electronic media use were investigated. Recommended future topics for study include parent-child conversation on electronic media contents, parental comments on contents, and the degree of involvement (either mere presence or active participation). In addition, it is imperative to examine the generalizability of the results of this study beyond children's age, gross household income, and children's gender. It is recommended that future studies recruit participants from means other than the Internet in order to make the study more generalizable.

This study examined relationships between electronic media use and children's QOL. Parent-child interaction affected QOL, which was an important implication. Ideal discipline regarding electronic media use should be examined in a future study.

REFERENCES

- Benesse Corporation. 2009a *Investigation research reports concerning child's ICT use.*
- Benesse Corporation. 2009b *Investigation research reports concerning generation and cancellation of educational difference.*
- Benesse Corporation. 2010 *Child life investigation reports.*
- Furusho, J. 2007 Examination of present condition of Japanese school age children: Using the Kiddo-KINDE[®] Questionnaire for measuring health-related quality of life in children. *Psychiatria et Neurologia Paediatrica Japonica*, **47**, 233–243.
- McCullough, G., Huebner, E. S., & Laughlin, J. E. 2000 Life events, self-concept, and adolescents' positive subjective well-being. *Psychology in the Schools*, **37**, 281–290.
- Ravens-Sieberer, U. & Bullinger, M. 1998 Assessing health-related quality of life in chronically ill children with the German KINDL: First psychometric and content analytical results. *Quality of Life Research*, **7**, 399–407.
- Shibata, R., Nemoto, Y., Matuzaki, K., Tanaka, D., Kawaguchi, T., Kanda, A., Furusho, J., Okuyama, M., & Iikura, Y. 2003 A study of the Kid-KINDL Questionnaire for measuring quality of life in elementary school children in Japan. *The Journal of the Japan Pediatric Society*, **107**, 1514–1520.
- Shibuya, A., Sakamoto, A., Ihori, N., & Yukawa, S. 2010 A long-term effects of parental mediation on children's video game play: A longitudinal study of Japanese children and their parents. *Studies in Simulation and Gaming*, **20**, 47–57.
- Valkenburg, P. M., Krcmar, M., Peeters, A. L., & Marseille, N. M. 1999 Developing a scale to assess three styles of television mediation: "Instructive mediation," "Restrictive mediation," and "Social coviewing". *Journal of Broadcasting & Electronic media*, **43**, 52–66.

NOTE

- 1) Gross household income was the sum of the mother's income and the father's income.