Parenting style and parental monitoring with information communication technology: A study on Japanese junior high school students and their parents

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ABSTRACT

Data were collected from 286 pairs of Japanese junior high school students and their parents to explore the association between parenting style and the intention to use monitoring systems incorporating advanced information technology such as GPS devices and IC cards. Results indicated that a majority of the participants had not experienced advanced monitoring systems, but more than half of the parents had some degree of intention to use them. The relationship between the intention to use monitoring systems and two types of parenting styles (i.e., responsiveness and control) reported by both parents and children was investigated. Categorical regression analyses revealed that parenting style was a predictor of the intention to use monitoring systems, with parent-reported control being the most significant predictor of parents' intention to use. Child-reported responsiveness also had a significant positive effect on child's intention to use, whereas child-reported control did not have such an effect. It became clear that parenting style was differently affected the intention to use advanced monitoring systems between parents and children; the significant predictor of parents' intention to use is their tendency of control and that of children's to use is their perceived responsiveness.

1. Introduction

1.1. Social background and advanced technology monitoring systems

In recent years, there has been a growing feeling that public safety in Japan is deteriorating, even though the actual number of crimes has been consistently decreasing. The police in 2002 recorded a total of 2.85 million crimes, which was the worst recorded number in the period after the Second World War, whereas only 1.70 million crimes were recorded in 2010 (National Police Agency, Government of Japan, 2010). This is indicative of a decline of approximately 40%. Nonetheless, the polls on social awareness that are conducted annually by The Cabinet Office of The Government of Japan (2010) have documented that more than 30% of respondents have been reporting that "safety" is a growing problem since 2003 (note that multiple answers were allowed). Moreover, this proportion was only slightly below 30% in the poll of January 2010, when the actual crime rate was at a minimum. This trend was especially notable among respondents in the child-rearing generation between 30 and 40 years of age. In this generation, between 30% and 40% of both male and female respondents reported feeling progressively less safe each year.

Given the rise in parents' fear for their children's safety and an overall societal decline in perceived safety, various anti-crime approaches have been implemented on school routes and around school property. The present study explored the desire to use the advanced information communication technology for child safety in Japan. Two types of systems were examined in this study. The first was a card with a built-in RFID (Radio Frequency Identification) that identifies the location of individuals by reading information in their cards (hereafter, "IC card"). The cards are able to track when students pass their school gate or a train station ticket gate. The second system was a mobile phone with a GPS function (hereafter, "GPS mobile") that detected the location of the children who carried these phones. These systems are gaining popularity in Japan. With these systems, registered parents are notified by e-mail when their children pass train station ticket gates or cross onto school premises. They also allow parents to track their children's location and travel route information as needed. With these systems (hereafter, "monitoring systems"), it has become possible for parents to monitor their children continuously, 24 h a day.

1.2. Theoretical background

In this study, the attitude and intention to use the monitoring system both of parents and children was approached regarding the use of monitoring systems from two perspectives: developmental psychology and human–computer interaction.

From the perspective of developmental psychology, understanding the relationship between parental monitoring and parenting style is important for a number of theoretical and practical reasons. Parental monitoring is defined as "a set of

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correlated parenting behaviors involving attention to and tracking of the child's whereabouts, activities, and adaptations" (Dishon & MaMahon, 1998). A body of research has explored the relationship between parental monitoring and prevention delinquent behavior of children (Branstetter, Furman, & Cottrell, 2009; Kerr & Stattin, 2000; Stattin & Kerr, 2000). These studies have suggested that monitoring behavior is related to parenting style and that both parental responsiveness, that is the degree to which children experience a warm and affectionate relationship with their parents, and parental control, that is parental demands and directive attitudes and behaviors that intrude on the child's psychological world, are associated with monitoring behavior (Soenens, Vansteenkise, Luyckx, & Goossens, 2006).

The parental monitoring behavior investigated in above studies was mainly parents observing their children and asking children what they did, where they went, whom they played with, and so on. As new technologies such as the Internet and mobile phone penetrated homes, parents are driven to monitor their children using these new technologies. For example, Internet mediation that let parents set limitation on children's Internet activities are a new type of parental monitoring. It has been reported that Internet mediation to control children's use of the Internet was affected by parenting style (Eastin, Greenberg, & Hofschire, 2006; Rosen, Cheever, & Carrier, 2008). The use of monitoring systems is another new form of parental monitoring. Parenting style and parent–child relationships are expected to be potential variables influencing both parents' intention to use monitoring systems and children's intention to accept them. This study investigated two types of parenting: responsiveness and control.

Recently, many approaches have been implemented throughout Japan to ensure child safety, especially the safety of elementary school students. This study, however, investigated junior high school students (early adolescents) and their parents for a number of reasons related to developmental psychology. Parents with a junior high school child must balance the child's need for autonomy and their own anxiety about the safety of their child. As children reach junior high school age, their scopes of activities expand, in comparison kindergarteners and elementary school students, placing them in situations without adults. Students at this age have a tendency to distance themselves from their parents, and parents get to know increasingly less about their children's lives. This can be a concern to parents, because the number of crimes that victimize children increase in adolescence and consequently, some parents experience anxiety about their children's safety. It is assumed that under these circumstances, parents are likely to be strongly motivated to use monitoring systems that allow them to determine their children's whereabouts.

Children in elementary school are less likely to refuse or rebel against the use of monitoring systems. However, as they grow older, parental authority diminishes and children become more likely to ignore parents' opinions and wishes. Moreover, the psychological distance between children and their parents increases when children enter junior high school. In this developmental stage, it is reasonable to assume that factors such as parent–child relationship and parenting style, as perceived by the children, would affect their appraisal of parental monitoring behavior.

From the perspective of human–computer interaction, numerous studies have demonstrated that the use of new electronic tools and instruments, such as the Internet and mobile phones are associated with psychological problems, such as anxiety and loneliness. For example, the use of mobile phone mail, a very popular communication medium in Japan, is sometimes problematic and addictive (Kamibeppu & Sugiura, 2005). Mobile phones enable users to keep in touch with acquaintances easily. However, when users try to contact others by mobile phone and cannot do so, it is likely to cause them feelings of anxiety and loneliness. Moreover, anxiety and loneliness drives users to search for connections with others, again through the use of mobile phone mail (Tsuji, 2006). Likewise, there is also the possibility that monitoring systems cause anxiety in parents. The monitoring system enables parents to track their children continuously and some parents might get anxious when they are not using the monitoring system. If a parent constantly monitors their child's whereabouts to decrease their own anxiety of not knowing the location of their child, the parents' behavior becomes a means of fulfilling their own needs, rather than a means of watching over their children. The child perceives the parent's behavior as a form of control and an intrusion. This may presumably affect the parent–child relationships, as well as other family relationships.

Based on the above assumptions, this study explored the association between the intentions to use monitoring systems and parenting style by analyzing paired data of parents and children.

2. Survey

2.1. Survey participants

Questionnaires were distributed to students by their teachers in a junior high school in a mid-sized city in Japan during September 2008. The students (hereafter, "children") and one of their parents (i.e., a main caretaker) were both asked to complete the questionnaires. Teachers handed out envelopes that contained questionnaires for the children and their parents. The children were asked that they and their parents complete the questionnaires separately at home, place them both in one envelope, and return the sealed anonymous envelope to their teacher.

2.2. Survey content for parents

2.2.1. Current use of monitoring systems
Respondents were asked to what extent they were currently using a GPS mobile and an IC card. To clarify the systems under investigation in this study, the questions were as follows: "Currently, do you use a system with a mobile phone to monitor the location of your child?" and "Currently, do you use a system with an IC card that notifies you by e-mail when your child enters and exits a school or passes train station ticket gates?" Respondents were asked to use a four-point Likert scale from "*1 = Never use it*" to "*4 = Often use it*."

2.2.2. Intention to use monitoring systems in the future
Respondents were asked to what extent they would like to use a GPS mobile and an IC card in the future, using a four-point Likert scale, ranging from "*1 = Never want to use it*" to "*4 = Very much want to use it*."

2.2.3. Parent-reported parenting style scale
As mentioned above, this study examined an affectionate, watchful attitude toward children (i.e., responsiveness) and an overly intrusive and directive attitude to oversee children (i.e., control) as parenting styles. A relationship between these attitudes and the intention to use the monitoring systems was assumed. Fifteen self-report items about the parents' perception of their own attitudes towards their children were developed based on the Parental Bonding Instrument (Parker, Tupling, & Brown, 1979), Parental Role Assessment Scale (Tanii & Uechi, 1993), and Mother's Separation Anxiety Scale (Hayashi, 2005). Responses were based on a five-point Likert scale ranging from "*1 = Totally disagree*" to "*5 = Totally agree*."

2.3. Survey content for children

Intention to use monitoring systems in the future: Respondents were asked to what extent they would like to use a GPS mobile and an IC card in the future using a four-point Likert scale.

Reason for intention to use monitoring systems: The reasons for the intent to use a monitoring system were assessed using a multiple-choice format for those respondents who had indicated that they "*very much wanted*" or "*somewhat wanted*" to use either a GPS mobile, an IC card, or both. To clarify why the children wanted to use a monitoring system, the following alternatives were provided: "For my parents' sense of security," "Because my parents would stop calling me if I used one," "Because my parents would not e-mail me anymore if I used one," "It would be good for my safety," "It makes me feel secure," and "Other."

Reason for intention not to use monitoring systems: The reasons for the children's intent not to use a monitoring system were assessed, using a multiple-choice format, for those respondents who had indicated that they "*never wanted to use*" or "*didn't want to use very much*" a GPS mobile, an IC card, or both. To clarify why the children did not want to use a monitoring system, the following alternatives were provided: "Because of the cost," "Because regular mobile phone functions are sufficient," "Because I do not understand the functions and mechanisms," "Because I do not want my parents to know what I am doing," "Because it would feel like I was being overseen by my parents," "Because I do not want to have a mobile phone," and "Other."

Child-reported parenting style scale: The parent-reported parenting style scale was revised so that children could report on the parenting style of their parents. Two items that assessed the degree of parental monitoring were also added: "*I am overseen by my parents*," and "*My parents watch over me*." Responses were based on a five-point Likert scale ranging from "*1 = Totally disagree*" to "*5 = Totally agree*."

3. Results

SPSS 17.0 was used to perform all of the statistical analyses.

3.1. Respondent attributes

A total of 376 households received a questionnaire packet, of which 288 households returned completed (response rate: 76.6%). Two cases were excluded from the analyses because they lacked responses from the children. The data for the remaining 286 cases were analyzed.

The mean age of the parents was 43.5 years old (range: 32–54 years, SD = 3.52). The composition of the parent sample was as follows: parents in their 30s (9.4%), 40s (83.9%), and 50s (6.6%). The sample consisted of 254 mothers (88.8%), 19 fathers (6.6%), and 13 individuals who provided no information concerning their relationship with the child (4.5%). Occupations included 151 homemakers (52.8%), 37 office workers (12.9%), 34 part-time workers (11.9%), 27 government employees (9.4%), and 13 professionals (4.5%), as well as 12 who responded "other" (4.2%) and 12 who provided no employment information (4.2%). The mean age for the children was 13.5 years old (range: 12–15, SD = 0.96). In the child sample, there were 129 males (45.1%) and 157 females (54.9%).

3.2. Intention to use the monitoring systems

3.2.1. Parent current usage and intention to use monitoring systems

Regarding current use of monitoring systems, 87.7% and 84.3% of the parents responded "Never use it" for the GPS mobile and IC card, respectively. Regarding intention to use a monitoring system in the future, 51.8% and 63.5% of the parents responded "Want to use it somewhat" or "Want to use it very much" for the GPS mobile and IC card, respectively, indicating that the majority of the parents had some degree of intention to use a monitoring system.

3.2.2. Child intention to use monitoring systems

As for children's intent to use one of the monitoring systems, 82.8% and 68.8% of the children responded, "Never want to use it" or "Don't want to use it very much" for the GPS mobile and IC card, respectively. These results demonstrate that the children had a much lower intent of using a monitoring system than did the parents.

The frequency of the reasons given to use a monitoring system were analyzed for the 100 participants who responded "*Somewhat want to use it*" or "*Very much want to use it*," regarding the GPS mobile, IC card, or both. The most popular reason given was "It would be good for my safety," which was selected by 57% of the children; 56% of the children chose "For my parents' sense of security." As for reasons not to use, the results of an analysis of the 247 children who responded "*Never want to use it*" or "*Don't want to use it very much*" for the GPS mobile, IC card, or both revealed that 57.1% of them chose "Don't want to be overseen by my parents," which was the most frequent reason reported by the children.

3.3. Scale construction

3.3.1. Parent-reported parenting style scale

An exploratory factor analysis (principal factor analysis) of the parent-reported parenting style scale, consisting of 15 items, suggested that a two-factor structure was appropriate based on the eigenvalues and interpretability. After removing the items that had a low loading on both factors and the items that had a high loading on both factors, a factor analysis (principal factor analysis with varimax rotation) revealed the presence of two factors, presented in Table 1. The first factor was named "parent-reported responsiveness," and the second factor was named "parent-reported control" (cumulative eigenvalue 40.3%). The mean value of the items with the highest loadings for each factor was defined as the subscale score. Cronbach's alpha for parent-reported responsiveness was 0.78 and 0.72 for parent-reported control.

3.3.2. Child-reported parenting style scale

A factor analysis (principal factor analysis) of the child-reported parenting style scale, consisting of 17 items, revealed that a two-factor structure was most appropriate, as was the case for the parent-reported parenting style scale, again based on the eigenvalues and interpretability. After deleting one item that had a very low communality score and items that had a low loading on both factors, a varimax rotation was conducted. The results of this analysis are presented in Table 2 (cumulative eigenvalue 41.3%). The first factor was named "child-reported responsiveness" and the second, "child-reported control." The "I am watched over by my parents" item that was added to the parent-reported parenting style scale was included in the child-reported responsiveness factor, and the item "I am overseen by my parents" was included in the child-reported control factor. The mean value of the items with the highest loading on each factor was defined as the subscale score. Cronbach's alpha for child-reported responsiveness was 0.85 and 0.75 for child-reported control.

3.4. Correlation analyses of scale scores

Parents and children's intent to use the systems, the mean values and standard deviations of the parenting style scales' subscale scores, and the correlation coefficients between the scales are

Table 1
Factor loadings for parent-reported parenting style scale.

Items	F1	F2
Parent-reported responsiveness (α = 0.78)		
I am happiest when I am with my child	0.754	0.023
I think that my child feels safe when he or she is with me	0.640	−0.018
My child is what I live for	0.597	0.173
I enjoy talking with my child	0.594	−0.155
I feel like something is missing when my child is not home	0.560	0.031
I relate to my child kindly and affectionately	0.559	−0.207
Parent-reported control (α = 0.72)		
I get frustrated when my child does not listen to me	−0.045	0.723
I advise my child on life and attitudes often	0.010	0.685
I cannot ignore weaknesses of my child	−0.040	0.571
I think that my child would not do anything unless his or her parent makes a fuss to some extent	−0.003	0.546

Table 2
Factor loadings for child-reported parenting style scale.

Items	F1	F2
Child-reported responsiveness (α = 0.85)		
Seems happiest when he or she is with me	0.795	−0.023
Relates to me affectionately	0.722	−0.144
I feel like I am watched over	0.706	−0.010
Enjoys talking with me	0.704	−0.200
Feels safe when I am with him or her	0.696	0.048
I think that I am what he or she lives for	0.575	0.111
Feels like something is missing when I am not home	0.545	0.150
More or less knows what I am thinking regularly	0.486	0.028
Child-reported control (α = 0.75)		
Cannot ignore my weaknesses	−0.087	0.757
Is frustrated when I do not listen to them	−0.080	0.731
Advise me on life and attitudes often	0.008	0.584
I feel like I am overseen	−0.089	0.534
It is natural that he or she wants me to be as he or she likes	0.113	0.477
Wants me to grow up as he or she likes	0.108	0.434

"My parent," "From my parent" and "To my parent" at the beginning of the sentences are omitted.

Table 3
Mean values, standard deviation, and correlation coefficient of variables.

	M	SD	(1)	(2)	(3)	(4)	(5)	(6)	(7)
(1) Parent intention (GPS mobile)	2.51	0.84	–						
(2) Patent intention (IC card)	2.74	0.95	0.660**	–					
(3) Child intention (GPS mobile)	1.79	0.76	0.211**	0.147*	–				
(4) Child intention (IC card)	2.10	0.87	0.110	0.141*	0.630**	–			
(5) PR responsiveness	3.79	0.61	0.102	0.136*	0.026	0.006	–		
(6) PR control	3.26	0.74	0.287**	0.218**	−0.037	−0.057	−0.038	–	
(7) CR responsiveness	3.33	0.66	−0.018	−0.037	0.219**	0.300**	0.307**	−0.078	–
(8) CR control	3.17	0.71	0.164**	0.155**	−0.007	0.020	−0.063	0.389**	−0.007

PR: Parent-reported.
CR: Child-reported.
* $p < 0.05$.
** $p < 0.01$.

summarized in Table 3. There were relatively high positive correlations between the intention to use a GPS mobile and the intention to use an IC card among both parents and children. There were weak positive correlations between parents' intention to use and children's intention to use.

Regarding parenting style, no association was observed either between parent-reported responsiveness and control or between child-reported responsiveness and control. This result indicates that responsiveness and control are appropriately considered to be two different parenting styles. There were significant correlations both between parent-reported responsiveness and

child-reported responsiveness and between parent-reported control and child-reported control. In other words, it was demonstrated that parent-reported parenting style and child-perceived parenting style ratings tended to agree.

As for the relationship between intention to use and parenting style, there was a significant correlation for parent intention to use with parent-reported control and child-reported control. The children's intention to use was significantly correlated only with the child-reported responsiveness score. That is, when the levels of parent-reported control and child-reported control were both high, parents reported a strong intention to use a monitoring

Table 4
Beta for predictors of parents' intent to use monitoring systems (categorical regression analysis).

Variables	GPS mobile	IC card
PR responsiveness	0.108	0.134[*]
PR control	0.273[**]	0.210[**]
Parent age	−0.147[*]	−0.067
Child age	−0.107	−0.085
Child gender (male = 1, female = 2)	0.115[*]	0.086
R^2	0.131	0.068

PR: Parent-reported.
CR: Child-reported.
[*] $p < 0.05$.
[**] $p < 0.01$.

system. Children, on the other hand, had a strong intention to accept a monitoring system when they perceived their parents as having a high level of responsiveness.

3.5. Categorical regression analysis

3.5.1. Parents' intention to use

The effects of parent-reported parenting style on the intention to use a GPS mobile and an IC card were analyzed using models in which the intent to use a GPS mobile and the intent to use an IC card were entered as dependent variables and parenting style and some demographic variables were entered as independent variables. Because the dependent variables, intentions to use a GPS mobile and an IC card, were measured on ordinal scales, a categorical regression analysis with optimal scaling method was conducted. As summarized in Table 4, the results suggested that parent-reported control had the greatest effect on the intention to use both a GPS mobile and an IC card. For the IC card, parent-reported responsiveness also had a weak, positive effect on intent to use. For the intent to use a GPS mobile, the effects of child gender and parent age were significant; that is, the intention to use a GPS mobile tended to be higher for girls and younger parents.

3.5.2. Children's intention to use

A categorical regression analysis with optimal scaling method was conducted to examine child intention to use a monitoring system in which the intent to use a GPS mobile and intent to use an IC card were entered as dependent variables and child-reported parenting style, parent-reported parenting style, and demographic variables were entered as independent variables (see Table 5). The results suggested that child-reported responsiveness had a significant positive effect on both the use of a GPS mobile and an IC card; that is, the intention to use a monitoring system was higher when child-reported responsiveness was high. In addition, the child's age had a significant effect, such that there was a higher intention to use among younger children.

Table 5
Beta for predictors of children's intent to use monitoring systems (categorical regression analysis).

Variables	GPS mobile	IC card
CR responsiveness	0.205[**]	0.317[**]
CR control	0.041	0.128
PR responsiveness	−0.023	−0.053
PR control	−0.033	−0.109
Child age	−0.224[**]	−0.272[**]
Child gender (male = 1, female = 2)	0.001	0.053
R^2	0.077	0.182

PR: Parent-reported.
CR: Child-reported.
[**] $p < 0.01$.

3.6. Difference in parent–child intentions to use

Subsequently, the difference between parents' and children's intentions to use was examined. The sum of the intentions to use a GPS mobile and an IC card was used as a total score for the intention to use monitoring systems. The difference between the total intention scores for parents and children was calculated by subtracting a child's intention score from his or her parent's intention score. The larger the difference between the two total scores, the larger the gap between the extent to which a parent wanted to use a monitoring system and the extent to which a child wanted to use one.

The correlation analyses revealed that the difference between the total intention scores of parents and children had a significant positive association with parent-reported control and child-reported control ($r = 0.27$, $p < 0.01$; $r = 0.13$, $p < 0.05$, respectively) and had a significant negative association with child-reported responsiveness ($r = −0.27$, $p < 0.01$). When child-reported responsiveness was high, this difference was small; that is, parents' and their children's intentions tended to agree. In contrast, when parent-reported control and child-reported control were high, the gap between parents' and their children's intentions was large, suggesting that the parents wanted to use a monitoring system but their children did not.

4. Discussion

The purpose of this study was to explore the relationship between parenting style and intention to monitor children using systems with advanced information communication technology, such as an IC card and a GPS mobile. As for the parents' intention to use, the most effective predictor was parent-reported control. Specifically, the higher parent-reported control was, the higher the intention to use a GPS mobile or IC card monitoring system became. Parents with a directive attitude and a tendency to oversee their children tended to have a stronger intention to monitor their children using advanced systems. Interestingly, children were more likely to use a monitoring system if they perceived their parents as being responsive rather than controlling.

Parent and child appraisals of parenting style were correlated, suggesting an agreement in intention to use a system. For example, if parent-reported responsiveness was high, child-reported responsiveness was also likely to be high. As such, it may be that when a good parent–child relationship has been developed, in which the parent gives and the child perceives parental affection, the child is more likely to accept a monitoring system.

By using a monitoring system, such as a GPS mobile or an IC card, parents can keep track of their children's whereabouts on their way to and from school in almost real-time. It would not be surprising for children in junior high school who carried a monitoring system to think that they were being overseen and controlled by their parents and to have a negative reaction to the use of monitoring systems. If this is correct, why did the children who perceived a high level of parental responsiveness express a high intention to accept a monitoring system? Soenens et al. (2006) demonstrated that parental responsiveness led to child self-disclosure and resulted in knowing more about their children. Child self-disclosure and parent–child communication are beyond the scope of this research, but it can be speculated that, for respondents in this study, close communication was maintained in relationships in which parents gave and their children perceived a high level of responsiveness. In these relationships, it is assumed that parents and their children exchanged information about the child's behavior and, as such, a sense of security was gained from the use of monitoring systems, and negative evaluations about the use of monitoring systems for parental control were minimal.

The data also revealed that when parent-reported control was high, there was a gap between the parents' and the children's intention to use a monitoring system. When children perceive a high level of parental control, they may be afraid that the use of monitoring systems may further strengthen parental control and the parents' tendency to oversee their behavior and, therefore, their intention to use such a system may be reduced. Indeed, the most common reason children gave for not wanting to use a system was "Because it would feel like I was being overseen by my parents." This dynamic is suggestive of a family in which a child does not want to be controlled and a parent who is controlling. Overall, the results suggested that advanced monitoring systems could contribute to child safety and parents' sense of security when the use of the systems is based upon mutual trust and agreement.

There are some questions that remain to be answered by future research. First, the results revealed slightly different effects for parent-reported parenting style on the intent to use a GPS mobile and the intent to use an IC card. That is, the IC card was associated with parent-reported control and parent-reported responsiveness, whereas the GPS mobile was significantly associated only with parent-reported control. This difference may be attributed to the difference in the systems' functions and the difference in their users' behavior. Monitoring with an IC card is typically performed through a mechanism in which parents automatically receive messages, such as an e-mail, when the information in the children's IC cards is read. In other words, when parents use an IC card to monitor their child, their behavior is passive and inactive. By comparison, when parents monitor their children using a GPS mobile, parents themselves must actively track their children's whereabouts using a mobile phone or a computer; their monitoring behavior is based on their own will and desire to monitor. Therefore, the use of a GPS mobile requires active monitoring, which is associated with a controlling tendency. The choice of this system may be primarily influenced by a controlling style of parenting. The difference of user's behavior among systems and the reason for the choice of a system needs further examination.

Secondly, most respondents in this study had not used a monitoring system before and therefore, the respondents' intention to use such a system at some future date, rather than the actual use of a system was analyzed. As noted before, new technologies are likely to affect human behavior and interpersonal relationships, and sometimes they create psychological problems. For example, time spent at home using the Internet was found to relate negatively with life satisfaction and positively with loneliness (Stepaniva, Nie, & He, 2010). Moreover, early studies have reported that greater Internet usage was associated with fewer numbers of hours spent communicating with family members (Kraut et al., 1998). From this perspective, the actual use of monitoring systems may affect parent–child relationships and children's mental health. These implications need to be examined in longitudinal studies.

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