

Family Socioeconomic Status and Personal Media Technology Use

by

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ABSTRACT

This study presents a survey on whether teenage children's family socioeconomic status is related to the children's mobile phone ownership, tablet ownership, and app use. This study conducts a secondary data analysis which analyzed the total responses of 802 teens and parents survey in 2012. The results suggest that children's family socioeconomic status is related to mobile phone and smart phone ownership, as well as app use. Specifically, teenage children in higher socioeconomic status families are more likely to have a mobile phone, smart phone or a tablet, and are more likely to have downloaded apps than teenage children of lower income parents. Implications of these findings are discussed.

Key words: family socioeconomic status; Personal Media Technology Use; digital divide; knowledge gap; income; education; older parents; teenage children

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Introduction

This thesis presents a study designed to test whether teenage children's family socioeconomic status (SES) is related to digital device ownership and usage. Socioeconomic status is an economic and sociological combined measure of a person's work experience and of an individual's or family's economic and social position in relation to others, based on income, education, and occupation (Madden, Lenhart, Cortesi, & Gasser, 2013). This study contributes to the literature on socioeconomic status and child's mobile phone ownership, tablet ownership, and app use by testing the hypothesis that the increasing effect of family income, parents' age and education relates to their children's use of digital devices. Specifically, the study uses responses to a survey of totally 802 teen and parent pairs to examine whether teens' family SES is related to the ownership and usage of smart phones or tablets or app downloads. This study provides further evidence of a steepening gradient in digital device ownership. Results of this study imply that family SES is closely associated with the personal media technology access. The strong association between family SES and personal media use indicates that digital inequality is potentially becoming more and more severe. Families that have lower income are less likely to be able to afford mobile phones, smart phones, tablets, or app downloads. Teens from such families have limited access to the information age, and thus are more likely to lack computer skills and more likely to find themselves on the deprived side of the digital divide. As a consequence, knowledge gaps may widen over time.

Literature Review

Understanding the Digital Divide

The digital divide hypothesis was developed to describe the differences that develop between people who have access and the resources to use new information and communication tools and those who do not, especially in terms of skills, knowledge, and abilities. The term "digital divide" refers to the gap between individuals, households, businesses and geographic areas at different socioeconomic levels with regard to both their opportunities to access information and communication technologies and to their use of the Internet for a wide variety of activities (OECD, 2001).

As the world hastens the process of providing more advanced digital services, those who cannot take advantage of these services fall behind in terms of socioeconomic opportunities. In many parts of the world, the digital divide is an issue that goes beyond a gap in Internet access (OECD, 2001). The digital divide has largely been viewed as an access divide. Now questions are being raised over the impact of this improvement on the ability of consumers to harvest the potential benefits of technological progress. Hence, understanding the digital divide requires the term to be broadened to also include the ability to use new media technologies. The range of inequality or difference in some respects in SES in a population is undoubtedly related to the widening of the digital divide (OECD, 2001).

Knowledge Gap Theory

The knowledge gap hypothesis predicts that "as the infusion of mass media information into a social system increases, higher socioeconomic status segments tend to

acquire this information faster than lower socioeconomic-status population segments so that the gap in knowledge between the two tends to increase rather than decrease” (Tichenor, Donohue, & Olien, 1970, p.163).

In addition, Tichenor, Donohue, and Olien (1970) suggest five reasons why the knowledge gap should exist:

“Communication skills: higher status people generally have more education, which improves their reading, comprehension, and memory skills; Stored information: higher status people are more likely to already know of topics in the news through previous media exposure or through formal education; Relevant social contact: higher status people generally have a broader sphere of activity, greater number of reference groups, and interpersonal contacts and are thus more likely to discuss news topics with others; Selective exposure: lower status people may be less interested, and therefore less likely to expose themselves to certain news topics; and Media target markets: media outlets cater to the tastes and interests of their audience” (p. 169).

Graham (2011) indicate that since gender, age, racial, income, and educational gaps in the digital divide have lessened compared to past levels, some researchers explain that the digital divide is shifting from a gap in access and connectivity to information and communication technologies to a knowledge divide.

Rural and Urban Teenagers’ Gender Divide

Ferras, Pollan, Garcia and Pose (2012) investigated how rural youth communicate through cell phone and whether there is any significant difference due to sex. They stipulated that rural adolescents have never had the same ready access to means of communication as urban adolescents because the arrival and spread of innovation and technology to rural and outlying areas has lagged. Participants indicated that they feel that having a mobile phone gives them greater independence from their parents and allows them to become more socially integrated in their peer groups. Girls are more dependent on their

mobile phones than boys, and they value the intimacy this technology allows them to have in their social relationships more as well (p. 501).

Cawley and Hynes (2010) examined the social adoption of the mobile phone by Irish teenagers in city, town, and rural settings. The study draws on a social shaping and domestication of media technologies approach, using original empirical data from a survey of teenage respondents and six focus groups. The findings indicate that teenagers' relationship to the mobile phone is evolving as newer communications applications emerge. In particular, the technical competencies and media literacies necessary for multi-mode communication are evolving fastest where locational and socioeconomic conditions are most favorable. They also argue that despite near-universal ownership of the technological device among the sample of teenagers, there are still wide digital and socioeconomic divides in mobile phone ownership and use.

Choi's (2009) recent study, compares South Korean males and females' motivation for the intention to use mobile TV. A framework is provided to distinguish among users and to explore whether different demographic groups are motivated differently and whether those motivations shape attitudes or behavioral intentions in the use of mobile TV. The data were collected from participants from two universities. According to some gender-based individual differences between motivation variables and attitude, males' attitude was influenced by entertainment, permanent access and fashion motivation, while females' by social interaction and permanent access. The most distinct difference was in social interaction and fashion/status motivation. The study found out that a male's generally higher confidence with communication technology and the nature of the

medium can be the reason for the more significant relationship between entertainment and attitude in them. Choi points out that this study is conducted for potential users from undergraduate students in South Korea, not for actual consumers of mobile TV which might be a limitation in the study (Choi, 2009, p. 157).

Educational and Social Divide

Some see the technological breakthroughs we live with as hopeful and democratic new steps in education, information gathering, and human progress. But others are deeply concerned by the eroding of civility in online communication, declining reading habits, withering attention spans, and the treacherous effects of peer pressure on young people. Bauerlein (2011) has emerged as one of the foremost critics of the emerging, overwhelmingly digital, social culture. Bauerlein (2011) recognizes that the digital divide is one of the most pressing problems of increasingly online culture. Bauerlein (2011) encourages framing discussion about these issues so that leading voices from across the spectrum, supporters and detractors alike, have the opportunity to weigh in on the profound issues raised by the new media-form such as questions of reading skills and attention span, to cyber-bullying and the digital playground.

A recent study by Li and Ranieri (2013) aimed to explore digital divide issues among Chinese children from both educational and social perspectives. The study found that: (1) students' Internet access at home is better than that at school; (2) compared with parents, teachers have more positive influence on students' Internet behavior; (3) students from rural or migrant schools score lower on all the Internet inequality indicators (digital access, autonomy of use, social support, Internet use and self-efficacy) and are therefore more

disadvantaged in Internet usage status than their urban peers; (4) there are no significant gender differences; (5) the more education parents have received, the better the conditions of their children according to the listed Internet inequality indicators; (6) the dimensions of the Internet inequality indicators (technical apparatus, autonomy of use, availability of social support, variation of use) are significantly correlated to students' Internet self-efficacy; (7) there is high correlation between students' Internet self-efficacy and their exploring behaviors of Internet use and their academic performance. Overall, these results are consistent with data from other countries and confirm that the digital divide represents an important social challenge. They also suggest that schools may still, as of yet, not developed effective strategies to balance social and learning opportunities among students, particularly when it comes to technology.

User Motives

Lin (1999) examined user motives on the survey of the relationship between perceived television use and online access motives among those who do not presently subscribe to a commercial online service, and how such relations influence the likelihood of online-service adoption. In the study, Lin (1999) tries to explain whether these two sets of motives can really be substituted and finds that it implies the basic audience motives for seeking either traditional mediated content or online content appear to be similar from the literature's perspective. He expects that perceived audience motives for traditional mediated content use and online-service use may both be potential antecedent variables to likely online-service adoption. Participants were asked questions about the TV and online-service motives and TV use level and likely online-service adoptions. A sample of 384 respondents contacted via random digit dialing in a diverse metropolitan area of more than

2 million residents were asked questions about their TV and online-service motives and TV use level and likely online-service adoptions.

Lin (1999) did not find a connection between the companionship motive for TV use and the surveillance motive for online-service use. Lin's (1999) findings did suggest that user motives between TV exposure and potential online-service access are weakly correlated, as TV-use motives are largely insignificant predictors for potential online-service adoption. Implications for advertisers are explored in light of the convergence between television and online services, which continues along technological as well as content dimensions.

Survey research that focuses on investigating purchase behavior, demographics, and psychographics should also address the psychological motives that help divide up the user patterns in order to help pinpoint targeting strategy. Lin emphasizes that future research will need to conceptualize the complex web of new media, which possesses interchangeable technical traits and content characteristics (Lin, 1999).

Factors Affecting Adoption

Chang, Lee, and Kim (2006) take up an examination of online games as an innovation and new medium. The study examined factors that affect the adoption or use of online games and a general profile of online game users to better understand game use. This study looks at online game use from the perspective of a diffusion of innovation theory. It also stresses the importance of needs that individuals attempt to fulfill by using online games by integrating uses and gratification and diffusion of innovation approaches. The authors note that adopters of online games consist of continuers (users who have continued

to play online games since their adoption) and discontinuers (users who at one time adopted, but have not continued to use online game), non-adopters (meaning those who did not adopt an innovation but were willing to try later), and resisters (those who did not adopt an innovation and had no intention of adopting it). Based on the typology, this study first examines the overall differences between adopters and non-adopters, the differences between continuers and discontinuers of online games in the adopter group and the differences between potential users and resisters among non-adopters (P.296).

Based on an email survey sample of 800 Korean college students, Chang, Lee, and Kim mainly focus on examining the factors that affect the adoption decision of online games. They asked adopters what types of online games they prefer, and the preferred game types varied between male and female students. The authors suggested an integrated model of online game adoption in which seven constructs are supposed to indirectly or directly affect the adoption decisions of online games and summarize the seven independent constructs and related variables. This study originally used three different variables: Popularity among family, friends, and society. Screening the variables, a principal component analysis extracted only one factor. After conducting a reliability test, they average the three variables, making one total variable (Chang, Lee, & Kim, 2006).

They suggest that what was significant was not new media ownership but media use, video game use, as well as Internet access. According to the results of a logistic regression analysis, gender and relative advantage – the opinion that playing online games is better than alternative activities – were significant predictors; these results were similar to the findings for adopters versus non-adopters. Findings regarding potentials versus resisters

suggest younger people are more likely to adopt online games. Multiple logistic regression analyses showed that demographic profiles and innovativeness were strongly predictive of online game adoption (Chang, Lee, & Kim, 2006, p. 307).

Cell phones are no longer only a voice medium or even a voice–text messaging medium. Since smart phones and tablets are becoming an important part of daily life, the factors influencing assessments of new cell phone services are likely to differ somewhat depending on the media orientation of those services, their functions, social factors, and user needs. As a consequence, digital divide, social support, and privacy issues have come into consideration in analysis of potential new cell phone services.

Rice, Ronald, Katz and James (2008) conducted a survey which deals with the assessment of the new functions and features of the text and video services of cell phones. They develop a basic model of demographic, social, and prior technology use influencing on interest in three categories which are surveillance, entertainment, and instrumental activities derived from uses and gratifications studies of traditional and new media services. The authors found that few prior studies have considered or analyzed the overlapping adoption categories of the primary new media and their discrete influences (p. 456).

The results of the social factors, communication technology use, and assessments survey show that the respondents indicated high levels of social support, and had their family and friend contacts equally distributed among the three distinct categories. The respondents held strong beliefs in privacy rights but moderate concerns about privacy threats, and somewhat negative assessments of entertainment services. The survey presents regression results of the influences of the demographic variables on the intervening

variables of communication technology use, social support, and privacy beliefs and concerns but provides limited support for an explanatory framework involving digital divide factors, social factors prior communication technology use, and related media substitutions, which might influence assessments of new mobile telecommunication services representing a small set of expected gratifications (Rice et al., 2008).

Shin's (2011) study investigates how and why e-learning, or online learning, resources influence users' perceived e-Learning experience. This study utilized a cross-sectional research design to evaluate book consumers' actual interest in and preferences for digital content, and the factors that influence reading habits. The findings confirm the significant roles played by users' cognitive perceptions and also suggest that there are significant relationships between the users' uses and gratifications expectancy for e-learning resources, the importance of emotive factors and their Perceived e-Learning Experience. The model integrates current research on e-books and suggests a cluster of antecedents related to technology acceptance. The author includes the demographic factors, such as age, gender, and income to test how they moderate the path relations in the model. The variables in this study derived from the existing literature, and exhibited strong content validity. The author estimated the hypothesized causal paths to test structural relationships. The overall theoretical and practical implications of this study contribute to an understanding of the generic relationship between media and learning.

In contemporary societies, mobile phone and Internet services are widely used, playing an important role in everyday interpersonal communication. Petric, Petrovic, and Vehovar (2011) looked into the patterns of social use of interpersonal communication

technologies that can be recognized in today's complex media environment, in which people have many channels available for interpersonal communication. The authors argue that it is not as important to discover particular uses that people put new technologies to, as it is to detect on the societal level regularities and patterns in social uses of various communication channels in a complex media environment. The study tested this hypothesis using data collected from a representative nationwide sample. The authors did a comparative uses and gratifications investigation into actual uses. Two challenges are brought up which are pertaining to the issue of how to conceptualize use and the referring to the related issue of finding the criteria to categorize various uses in order to study patterns of uses.

The results show that the 95% of mobile phone users draws on this device for strategic use, 77 % of them reported using a mobile phone for socializing, while 69% of them gave an account of using it in terms of cooperation and exchanging information. Most fixed-telephone users draw on the telephone for strategic use but not for socializing. Almost all the respondents are involved in face-to-face communication for reasons of optimizing their activities and socializing activities. Most Internet users use the Internet for communication practices whereas only 1/5 reported using it for expressive purposes. For the analysis of communication channel and type of social use, the result indicated that differences exist in the mean ratings of frequency of types of social uses. They observed an interaction effect between communication channel and type of social use which suggests that significant but modest differences exist in usage patterns of communication channels. Using various statistical techniques, they made an assessment of how the five communication channels,

which are mobile phone, short text messages, telephone, face-to-face and the Internet, are employed for informational-cooperative, strategic, relational and expressive social uses. For the purpose of discovering patterns regarding the social uses of communication technologies in everyday interpersonal communication, the authors perform a quantitative empirical analysis of the complex interpersonal media environment on the basis of conceptualizing social use as a social action which shows that all communication technologies seem to enjoy high levels of interpretative flexibility as they are employed in various combinations of social uses and are rarely confined to single uses. They believe that conceptualizing social uses as social action might provide a sound basis in all the regards.

According to van Deursen and van Dijk (2014), people with low levels of education and disadvantaged people are using the internet for more hours a day in their free time than people with higher education and employed populations. The data was collected by online surveys which required participants answer the question within 12 minus. The results indicated that individuals with higher SES tended to benefit from Internet use more (p. 520).

According to Smith (2012), 90% of American adults own a cell phone, 58% of American adults have a smart phone, 32% of American adults own an e-reader, and 42% of American adults own a tablet computer. Ages is related to mobile phone and smart phone ownership. The study shows that 17% of the people who are 18-29 years old use smart phone for Internet access, email, and apps while 11% of the people who are 30-49 years of age use smart phones for Internet, email, and app uses. The study also found that age is the

best predictor of whether someone will upgrade to a smart phone. Younger non-adopters are much more likely than their elders to say that cost is the main factor preventing them from purchasing a smart phone, while older non-adopters are more likely to point towards a lack of need or interest, or towards challenges with using a more advanced device.

This literature review illustrates that the following factors help to explain the hypothesized relationships between family socioeconomic status and personal media technology use: digital divide; family socioeconomic status; parents' knowledge; parents' age; rural and urban teenagers' gender divide; educational and social divide; motives of the users and some other factors affecting the adoption of digital devices. The literature indicates that family socioeconomic status (SES), education and income represent major factors toward children's adoption, access and possession of digital devices while the effects of age and sex on SES are different.

Rationale and Hypotheses

Digital divide is used to describe the differences between people who have access and resources to use new information and communication tools and those who do not. Relationships between family SES variables, mobile phones, smart phones and tablet ownership, and app usages should be consistent with the digital divide hypothesis and the results of previous research. Mobile phones have been developed rapidly, people can use mobile phones to do many things now, such as emailing, playing games, listening to music, watching video, and taking pictures. These kinds of mobile phones have replaced many other products, and people call them smart phones. Relationships between parents SES and their ownership of mobile phones, smart phones, tablets, and app downloads should be consistent with the results of previous literature review discussed above and the hypothesis listed as follows.

Previous studies found that age is significantly related to mobile phone and smart phone ownership (e.g. Smith, 2012). In this study, according to the data, hypothesis 1 includes the relationship between children's parents' age and children's ownership of mobile phones, smart phones, tablets, and app downloads.

H1a: Children of older parents will be more likely to report that they have a mobile phone.

H1b: Children of older parents will be more likely to report that they have a smart phone.

H1c: Children of older parents will be more likely to report that they have a tablet.

H1d: Children of older parents will be more likely to report that they have downloaded apps.

Previous research found that people with different education levels have different usage of mobile phones or smart phones. The more education parents have received, the better the conditions of their children according to the listed Internet inequality indicators (Li and Ranieri, 2013). In this study, hypothesis 2 includes the relationship between parents' education and children's ownership of mobile phones, smart phones, tablets, and app downloads.

H2a: Children of parents with more education will be more likely to report that they have a mobile phone.

H2b: Children of parents with more education will be more likely to report that they have a smart phone.

H2c: Children of parents with more education will be more likely to report that they have a tablet.

H2d: Children of parents with more education will be more likely to report that they have downloaded apps.

Parents' income also has an important relationship with children's ownership of mobile phones, smart phones, tablets, and app downloads. Previous studies found that people with more household income are more likely to have a smart phone. In this study, hypothesis 3 includes the relationship between parent's income and children's ownership of mobile phones, smart phones, tablets, and app downloads.

H3a: Children of parents with higher incomes will be more likely to report that they have a mobile phone.

H3b: Children of parents with higher incomes will be more likely to report that they have a smart phone.

H3c: Children of parents with higher incomes will be more likely to report that they have a tablet.

H3d: Children of parents with higher incomes will be more likely to report that they have downloaded apps.

Methods

Participants and Procedures

This study utilizes a secondary data analysis to test the hypotheses discussed previously. The Teens and Privacy Management Survey was conducted by the Pew Research Center's Internet and American Life Project. The survey used random digit dialing of both landlines and mobile phones to conduct interviews with a nationally representative sample of 802 teens aged 12 to 17 years-old and their parents living in the United States during August of 2012. Multiple attempts were made to contact participants who were not reached on the first call. Interviews were conducted by Princeton Survey Research Associates International (Madden, Lenhart, Cortesi, & Gasser, 2013).

For the mobile phone participants, interviewers first made sure that the respondents were in a safe place to talk during the interview. Interviews began by screening participants to confirm that there were teenagers in the house, which was a necessary prerequisite to participation in the survey. Parents were asked basic demographic questions. The data were kept only if the child portion of the interview was completed. A total of 802 parent and teen pairs completed the interviews (Madden, Lenhart, Cortesi, & Gasser, 2013).

Variables

Independent variables included the age of parents, education level of parents, and the income of parents. The average age of parents was 44.53 (SD= 9.07). Parents' education was assessed on a scale of 1, indicating "None, or grades 1-8", to 7, indicating "post-graduate training" (M=4.47, SD=1.75). Finally, parents were asked about the total

income from last year on a scale of 1, indicating “less than \$10000”, to 9, indicating “\$150000 or more” ($M=5.29$, $SD=2.40$).

Dependent variables included children’s ownership of mobile phone, smart phone, tablet, and app downloads. Teen participants were asked if they have a mobile phone, if they had a smart phone like an iPhone or Android, if they had a tablet like iPad, Samsung Galaxy, etc., and if they had ever downloaded an app. For mobile phone ownership, 77.9% said that they have a mobile phone while 22.1% said that they don’t. For smart phone ownership, 36.9% said that they have a smart phone while 60.3% said they don’t. For tablet ownership, 23.5% people said they have a tablet and 76.5% said they don’t. In order to measure the apps download, participants who said that they had a smart phone or tablet were also asked that whether they had ever downloaded a software application or app to their smart phone or tablet. 71.1% said yes, and 28.9% said no.

Analysis

Currently, analysis is presented in the form of point-biserial Pearson’s correlations and logistic regression to test the hypothesized relationships with statistical controls. Logistic regression models the relationship between a dependent and one or more independent variables, and allows one to look at the fit of the model as well as at the significance of the relationships between dependent and independent variables to predict an outcome variable that is categorical from predictor variables that are continuous or categorical. In this study, the independent variables are parents’ age, parents’ income, and parents’ education. The dependent variables are the children’s ownership of mobile phones, smart phones, tablets, and app downloads.

Result

Recall that H1a-d stated that children with older parents would be more likely to have and use the media technologies examined as part of this study. As show in table 1, the data shows that there is a positive linear relationship between parents age and children's mobile phone ownership ($r=.100$, $p<.05$). Parents ages also have a positive relationship with children's smart phone ownership ($r=.051$, $p<.05$). In addition, parents ages have a positive linear relationship with children's apps download ($r=.066$, $p<.05$). Children with older parents are more likely have mobile phones, smart phones or app downloads than children with younger parents. However, there is a negative linear relationship between parents age and children tablet ownership ($r=-.030$, $p<.05$). Children with younger parents are more likely to have tablet than children with older parents. H1a, H1b, and H1d were supported.

H2a-d stated that children with better educated parents would be more likely to have and use the technologies examined as part of this study. The data shows that parents' education has positive linear relationship with children's mobile phones ownership ($r=.207$, $p<.05$), smart phone ownership ($r=.156$, $p<.05$), tablets ownership ($r=.045$, $p<.05$), and app downloads ($r=.063$, $p<.05$). H2a-d were supported.

H3a-b stated that teenage children of higher income parents would have and use new media technologies more. Indeed, children of relatively wealthier parents were more likely to have a mobile phone ($r =.175$, $p<.05$), have a smart phone ($r=.089$, $p<.05$), have a tablet ($r=.182$, $p<.05$), and to have downloaded apps ($r=.195$, $p<.05$). H3a-d were supported.

Table 1

Correlations Among for Key Study Variables

	Mobile Phone	Smart Phone	Tablet	Apps Download
Parents Age	.100*	0.51*	-.030	.066*
Parents Education	.207*	0.45*	.156*	.063*
Parents Income	.175*	.089*	.182*	.195*

Notes. Dependent variable: Mobile Phone, Smart Phone, Tablet, Apps Download.

“No” = 0, “Yes” = 1

* $p < .05$.

As shown in table 2, which describes the Logistic Regression equations, some of hypotheses were supported, and some were not supported by the calculated models. As shown in model 1 of the mobile phone ownership, Children’s parents’ age has no relationship with the ownership of children’s mobile phone ownership ($b=.002$, $p=ns$). However, children of parents with higher education have greater odds of having a mobile phone ($b=.181$, $p<.05$). Children of higher income parents also have greater odds of having a mobile phone ($b=.083$, $p<.05$).

In the smart phone ownership, as regard to hypothesis 2a, older parents are less odds of the child having a smart phone ($b = -.014$, $p < .05$). Higher income has greater odds of having a smart phone ($b = .122$, $p < .05$) However, parents' education has no relationship with the ownership of children's smart phone ($b = .029$, $p = ns$).

In the tablets ownership, older parents have lower odds of the child having a tablet ($b = -.023$, $p < .05$). Parent's with higher education have greater odds of having a tablet ($b = .152$, $p < .05$). Higher income has greater odds of having a tablet ($b = .127$, $p < .05$).

In the child app downloads, parent's age has no relationship with the children's downloading apps ($b = .008$, $p = ns$). Parents with higher education are the less odds of the children downloading apps ($b = -.089$, $p < .05$). Higher income has greater odds of the children downloading apps ($b = .212$, $p < .05$).

Table 2

Logic Regression Among for key Study Variables

	Mobile phone	Smart phone	Tablet	App download
Parent sex	-.191*	.022	.040	-.038
Parent age	.002	-.014*	-.02*3	.008
Parent education	.181*	.029	.152*	-.089*

Black or African- American	-.424*	.212*	-.304*	-.214
Asian or Pacific Islander	1.296*	-.353	.545*	.935*
Mixed Race	-.821*	-.902*	-20.111	-.775
Native America or American Indian	19.948	-.838*	-2.040*	-.598*
Other Race		.739*	.038	1.996*
Income	.083*	.122*	.127*	.212*
Parent has mobile phone	.468*	-.588*	.234	.521
Children sex	-.072	-.098	-.512*	.883*
Children age	7386*	.365*	-.084*	.149*
Constant	-5.729*	-5.428*	-.321	-2.821*

Notes. Dependent variable: Mobile Phone, Smart Phone, Tablet, Apps Download. “No” = 0, “Yes” = 1

* $p < .05$.

Discussion

This study suggests that parents' SES is related to children's new media technology use. Teenage children of older, more educated, and higher income parents tend to be more likely to have mobile phones, smart phones, and tablets, and are more likely to have downloaded apps. However, teenage children of older parent were less likely to have tablets.

The relationships and consequences of digital divide and knowledge gap are complex, and the more different the users are, and the wider the gap will be. And with the fast growing pace of information and communication technologies, the divide becomes more and more apparent. Also, digital divide and the knowledge gap are widening between developing countries and the industrial countries and within individual nations of different areas. Those whose family income is higher will receive more education and have more chances to access to information and communication technologies.

Norris (2001) declares that "A global divide is evident between industrialized and developing societies. A social divide is apparent between rich and poor within each nation. Within the online community, evidence for a democratic divide is emerging between those who do and do not use Internet resources to engage and participate in public life" (p. 436). In areas of education, considerable differences have already been identified in access to and use of information and communication technologies. As was mentioned above, in some rural or remote areas residents have lower access to information and communication technologies compared to other urban areas.

Speaking of the implications about the findings for education, especially in American elementary, middle and high schools, which have begun allowing students to carry and use electronic devices at school, both for socializing and for completing academic work, these policies create a tension, because public schools are supposed to serve all children equally but can't really do so if wealthier children have access to electronic devices that poorer students don't. This may lead to gaps within even a single classroom. Investment in infrastructure, staff, curriculum development, and leadership may be warranted to bridge the digital divide in schools that serve less-advantaged youth in order to effect cultural change in disadvantaged communities.

Since the present study mainly focuses on mobile electronic devices, the equipment in schools or universities seems less likely to help. Primary and secondary school education and adult education should introduce the information and media skills teaching plan to equalize the access and use of information channels. Children in urban schools and suburban schools have a very different sense of self-efficacy when it comes to mobile electronic devices. This study also implies that, to close the divide, more dollars need to be sent to rural schools or schools serving high percentages of low-income students.

There may exist a digital divide among different regions where there is socio-economic differentiation. Future research should examine the how student's information literacy education and access to digital devices is related to socialization among teens. Friendships and romantic relationships are increasingly created and maintained via social media apps like Instagram, Kik, Snap Chat and WeChat. These findings may mean that the digital divide can probably be added to the list of things that put poor teens at a social

disadvantage compared to their wealthier peers. The establishment of community technology centers in more impoverished areas may help to mitigate these problems.

Future research should also examine the impact of household size and/or number of siblings on new technology adoption. The number of children in a family may be an important moderator of the relationships between various SES and technology adoption variables. The more children a family has, the greater the financial burden of providing each child with a personal device.

In the crisis of the digital modernization, the questions of how to narrow or step over the digital divide and how to maximize information resources to the most vulnerable groups must be asked. Mobile digital devices may seem to be helpful in narrowing the digital divide, the gap between the socioeconomic status and information technology and among traditionally disadvantaged groups. Some previous research has found that mobile phone use among those with low family incomes was actually quite high. Similarly, Mobile phones have gradually become the combination of communication tools and toys. What began as an interpersonal communication terminal had developed into a personal multimedia communication terminal.

There may be other influences that contribute to the digital divide besides traditional SES variables. For example, there is a seemingly intensifying economic gap between developed and developing countries and the rich and the poor in different areas of the world such as what is considered poor in one country may well be considered wealthy in another. This is just one area that seems fertile for future digital divide research. If one implicit, normative goal of digital divide research is to better understand the gaps in order to reduce

them, researchers must think carefully about how gaps, both within and between nations, are defined.

The interaction effects of digital media use and SES of parents age, education and income on the use of mobile phones, smart phones, tablets or apps downloads show that, when the informational use of the Internet increases, people with higher level of education tend to learn a lot more than less educated people, widening the knowledge gap between different SES groups. Younger parents tend to have newer technologies than older parents. Younger parents are more likely to keep up with the trend than older parents.

Overall, this study contributes to the digital divide and knowledge gap literature by comparing access and use of the information and communication technologies with age, income and education. As access to the Internet becomes more common, the digital divide can be better defined as inequalities in the meaningful use of information and communication technologies. And this inequality is more pronounced among Internet users with different families' SES than among users of different age. More importantly, the data reveal that the digital inequality matters more than its age in that it leads to a greater knowledge gap as teens grow older.

This study also implies that people with more education tend to have better developed cognitive and communication skills, broader social spheres with more and more diverse social contacts, and a greater amount of stored information than their counterparts with less education. Therefore, as the infusion of mass media information into a social system increases, segments of the population with higher SES tend to acquire information at a faster rate than the lower status segments so that the gap in knowledge between these

segments tends to increase rather than decrease. The implication is clear that a digital divide is an economic and social inequality according to categories of persons in a given population in their access to, use of, or knowledge of cell phone, smart phone or other information and communication technologies. The divide may refer to inequalities between individuals, age, education, or income, usually at different socioeconomic levels (Chinn & Fairlie, 2007, P. 40).

This study has some limitations. In the first place, the variables were measured through participant responses, which may not be an ideal way to capture media use. In addition to the exposure, the respondents' attention paid to specific media content should be included. Additionally, the number of valid cases in the data set was relatively small. Although some statistically significant relationships were established based on this small sample, a larger sample size seems warranted. Furthermore, the dataset used in this study is a secondary data analysis. The data were not originally collected with the present research in mind. Therefore, the findings of the present research have to be interpreted with caution.

Future research should continue to examine the social consequences of the digital inequality. As the results of this study show, children of older parents are more likely to have mobile phones, smart phone and to have downloaded apps. It is valuable to investigate the reasons for the disparity in mobile phone ownership. In addition, the negative linear relationship between parents age and tablet ownership is also considerable. Children of older parents are less likely to have tablet than children of younger parents. Future research should examine the hypothesis that is not supported by this study.

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