Contents lists available at ScienceDirect

Computers in Human Behavior

Teens' concern for privacy when using social networking sites: An analysis of socialization agents and relationships with privacy-protecting behaviors

Yang Feng [a,*], Wenjing Xie [b]

[a] College of Mass Communication and Media Arts, Southern Illinois University Carbondale, Carbondale, IL 62901, United States
[b] School of Journalism, Southern Illinois University Carbondale, Carbondale, IL 62901, United States

A B S T R A C T

U.S. teens are spending substantial time on social networking sites (SNSs). Yet, only a few studies have documented teens' privacy-protecting behaviors on SNSs. Using data of Facebook teen users and their parents in the U.S. from the Pew Internet's Teens & Privacy Management Survey ($N = 622$), this study investigated the socialization agents of teens' level of online privacy concern, and the relationship between teens' level of online privacy concern and their privacy-protecting behaviors on SNSs. Based on path analysis results, this study identified parents and SNS use as the two significant socialization agents. In particular, this study revealed the role of parents' privacy concern and the role of SNS use in motivating teens to increase online privacy concern, which, in turn, drives teens to adopt various privacy-setting strategies on SNSs and to set their Facebook profiles to private. Implications for policy-makers and educators were discussed.

© 2014 Elsevier Ltd. All rights reserved.

1. Introduction

With the increasing popularity of social networking sites (SNSs) among teens, Lenhart et al. (2011) reported that Facebook has become the dominant social networking site among U.S. teens aged 12–17 and that 93 percent of teen SNS users have established a Facebook account. Considering the extent of teens' use of SNSs such as Facebook, privacy advocates have raised concerns about teens' vulnerability to privacy risks (Schonberger, 2005). Such concerns may not be in a vacuum. Survey from Pew Internet Research suggested that teens face potential risks associated with online life: while 43 percent of teen SNS users have been contacted online by strangers, 17 percent of teen SNS users have become "friends" with whom they have never personally met (Lenhart & Madden, 2007).

With the increasing use of SNSs among teens, online marketers try to reach more teens through social media and SNSs have become an important venue for them to collect teen consumers' information (Boveda-Lambie & Hair, 2012). For example, Facebook is sponsored by advertising revenue. Its privacy policy clearly states that "Facebook is a free service supported primarily by advertising. We will not share your information with advertisers

without your consent. We allow advertisers to select characteristics of users they want to show their advertisements to and we use the information users share with us to serve those advertisements... We (Facebook) take steps to ensure that others use information that you share on Facebook in a manner consistent with your privacy settings" (Facebook., 2009).

Regarding marketers' collection of information that teens share online, government regulations such as the Children's Online Privacy Protection Act (COPPA) require marketers to seek verifiable parental consent before collecting information from children under the age of 13 (Sheehan, 2004). However, teens above the age of 13 are not protected by COPPA. Moreover, existing regulations mainly focus on restricting online marketers' active collection of children's information, and children's and teens' voluntary information disclosure online are rarely covered. Since SNS users are motivated to share information in the virtual community and teens are not aware of online privacy as much as adults are (Lenhart & Madden, 2007), it would be especially hard to restrict teens to disclose information on SNSs. The inability to curb teens' voluntary information disclosure online, along with the increasing information sharing among teens, raises both public and parental concerns about online risks resulting from teen privacy loss (Willard, 2007). For instance, one online risk stemming from online marketers' attempts to collect personal information from teens is identity fraud (Schonberger, 2005). Another online risk is the bombardment

---

* Corresponding author. Tel.: +1 614 256 0063.
E-mail addresses: fengyang29@live.com (Y. Feng), wxie@siu.edu (W. Xie).

of unwanted commercial e-mails caused by teens' disclosure of personal information on SNSs (Grant, 2006; Liau, Khoo, & Ang, 2005). Regarding these online risks that teens face, it is necessary to explore the factors that increase teens' privacy concern and that encourage teens to take control of privacy settings on SNSs.

This study attempts to add to our knowledge by examining the privacy-protecting behaviors of teens aged 12–17, and the role of their parents and SNS usage in their privacy-protecting behaviors on SNSs. Our first aim is to examine the important socialization agents that influence teens' online privacy concern. The second aim is to explore the relationship between teens' level of online privacy concern and teens' privacy-protecting behaviors on SNSs, including their implementation of various privacy-setting strategies on SNSs and profile visibility on Facebook. The third aim is to investigate the demographic influence on the two socialization agents (parents' level of privacy concern, teens' level of SNS use), on teens' level of privacy concern, and on teens' privacy-protecting behaviors on SNSs.

2. Literature review

2.1. Concept of privacy and privacy settings on SNSs

Before discussing teens' privacy concern and privacy-protecting behaviors on SNSs, we will first explain the concept of privacy to provide a conceptual foundation about what privacy means and how the concept of privacy is applied in the context of SNSs. We will operationalize one of the dependent variables of this study – privacy-setting strategies – on the basis of the concept of privacy. We will also discuss the privacy options and settings on Facebook, which provides the operationalization of another dependent variable of this study – Facebook profile visibility.

As Palen and Dourish (2003) pointed out, privacy is a concept with multidimensional aspects and there is no consensus about a universally accepted definition of privacy (Wildemuth, 2008). Some scholars identified four distinct concepts of privacy (Introna, 1997), two of which have been regarded as directly related to technology use (Taraszow, Aristodemou, Shitta, Laouris, & Arsoy, 2010). One of the concepts of privacy is based on Westin (1967)'s idea that privacy is one's control over his or her own personal information. Westin (1967) defined privacy as "the claim of individuals, groups, or institutions to determine for themselves when, how, and to what extent information about them is communicated to others" (p. 7). Westin (1967, 2003)'s concept of privacy relies heavily on the impacts of information and communication technologies. According to Westin (2003), when information-technology developments were very limited, there was high public trust in and public comfort with the information collection and use activities by government and other agencies. Advances in physical, psychological, and data surveillance technologies such as mainframe computers in the 1960s started to make people recognize the dark side of new technologies regarding privacy intrusion. For example, a national survey in 1978 showed that 64% of the public were concerned about threats to personal privacy, up from 34% in 1970 (Westin, 2002). The rise of the Internet and the arrival of ubiquitous wireless communication devices such as the cell phone raised the privacy issue to be a first-level social issue in the U.S. (Westin, 2003). By virtue of these technologies, advertisers and business industries can use web site cookies to identify visitors, document and track their usage, and deliver advertisements or marketing messages based on consumers' private and personal information, which drew increased consumer annoyance (Garfinkel, 2000; Westin, 2002).

Westin (1967, 2003)'s concept of privacy is related to information and communication technology in general, and can be applied

in the context of SNS use in particular. With the feature to connect people, SNSs encourage or even require a user to reveal his/her real name, email, school, location and other identities when he/she registers for personal accounts, which leaves privacy a big concern (Lewis, Kaufman, & Christakis, 2008). Meanwhile, SNSs such as Facebook can provide large-scale data that people have never seen on previous types of media (Lohr, 2012). The development of data-mining technologies and applications, which was envisioned by Westin (2003), made it possible for advertisers or other third parties to obtain in-depth characteristics and personal interest of the consumers by tracking their privacy and personal information disclosed on SNSs (Lohr, 2012).

Another concept of privacy focuses on the "monitored" and "searchable" part of anyone's life (Lessing, 1998), which is also applicable in the context of SNS use. Lessing (1998) defined privacy as the part "which is left after one subtracts, as it were, the monitored, and the searchable, from the balance of social life" (p. 1). The monitored means the part of the life that is watched by the public in a regular way. For instance, in a small community, people's behaviors such as coming and leaving, buying in the local market, and talking with other people, can be observed and monitored by neighbors. The searchable means a person leaves letters, diaries, footprint, and other stuff or information in the environment through which other people can find, notice, or trace him/her. Lessing (1998) argued that under the traditional monitoring system such as a small community, data collected and monitored were transient and had high cost. For example, what people said and did was very easy to be forgotten or disregarded by their neighbors. However, crude modern technologies such as emails and telephone records made the data permanent and more searchable.

Looking at SNSs such as Facebook, users' behaviors and information are also monitored and searchable. People can disclose demographic information, update status, share emotions and thoughts, post photos and videos, and share personal interest on SNS, which makes advertisers easily observe and monitor their behaviors. Moreover, SNS users' names and profile photos appear in their friends' friend list. They can also leave comments on friends' timeline, photos, and videos and be tagged in others' news feeds, photos, and posts, through which they leave a footprint or record that is searchable and traceable by others, including advertisers and other third parties. Hence, Lessing (1998)'s concept of privacy is highly relevant for the discussion and research of privacy in SNSs. In this study, we will adopt Lessing (1998)'s concept of privacy and examine if teens have deleted or modified their monitored or searchable information on Facebook such as name, age, location, tags, comments, posts, friends, or even have deactivated their profiles or accounts, to protect their privacy.

Even though there were privacy concerns regarding SNS use, Facebook did not have the privacy-setting function until the beginning of 2008. Before that, Facebook had been criticized for its invasion of privacy and its potential commercial exploitation by third parties (Debatin, Lovejoy, Horn, & Hughes, 2009). Advertisers and online marketers can access Facebook users' personal information such as age, gender, location, hometown, photos, and personal interest without permission or authorization. They can also use Facebook for data tracking, phishing, and other malicious purposes, which can be considered as unethical or even illegal use of users' property (Guo, 2010). Research showed that the information disclosed on Facebook can be sufficient for third parties to identify a single user, even with the name removed (Felt & Evans, 2008). Other concerns also have been raised about the links between Facebook and its use by other agencies (Debatin et al., 2009). For example, the Patriot Act (2006) permits state agencies to disregard the privacy settings on Facebook to look up employees' information.

Currently, privacy options on Facebook have several categories, including whether the profile appears in search, limiting who can view the profile, whether a person allows other users to tag him/her in photos or posts, and so on. Facebook offers three preconfigured privacy options when user posts something: whether the item is visible to the "public", friends, or friends' friends (Aldhafferi, Watson, & Sajeev, 2013), and the latter two options are also considered as "private" (Lewis et al., 2008). This study will adopt these three privacy options to operationalize teens' Facebook profile visibility.

2.2. Online marketing to teens and teens' privacy concern

Given that many teenagers have access to automobile to go to the mall as well as have after-school jobs that provide them with some disposable income, advertisers and marketers have capitalized on teen consumers (Sheehan, 2004). With the growth of the Internet, marketers and advertisers discover more opportunities to target teens (Sheehan, 2004). Statistics showed that total U.S. teen spending reached $208.8 billion in 2012 and 26% of teens had placed an order online in the past three months ("Teenage consumer spending statistics, 2012). Today, more than two thirds of Internet sites designed for teens are supported primarily by advertising revenue (Neuborne, 2001). In addition, with the growing popularity of SNSs among teens, marketers and advertisers start showing an increasing interest in teens' online behaviors and a looming concern is the collection of personally identifiable information from teens on SNSs (Sheehan, 2004). Advertisers and online marketers have taken note of SNSs to deliver individually tailored ads. Their tactics include tracking user behaviors and activities on SNSs, searching for the pages and content SNS users have visited and browsed, and following their status change (for example, get "engaged", "married", or having upcoming birthday) to deliver advertising targeted to their interest (Hoy & Milne, 2010). These activities, however, have been considered by consumers as unacceptable and a violation of their privacy (Turow, King, Hoofnagle, Bleakley, & Hennessy, 2009). Even though government regulations such as the Children's Online Privacy Protection Act (COPPA) require marketers to seek verifiable parental consent before collecting information from children under the age of 13 (Sheehan, 2004), the concern about the practice of information collection from teenagers aged above 13 was not addressed by COPPA (Sheehan, 2004), showing that teens' online privacy, especially privacy on SNSs, has not attracted enough attention from the government and the society and thus calls for more research on this issue. This study will make such an attempt to examine teens' privacy concern and privacy-protecting strategies on SNSs.

Nowak and Phelps (1995) argued that consumers' online privacy can be harmed when they are unaware of marketers' collecting their personal information or when their personal information is used beyond the original purpose without their permission. This is a serious issue because many SNS users do not read the privacy policy when they sign up (Ou, 2011). For instance, Facebook's privacy policy stated that on the basis of users' privacy settings, Facebook will adopt the information users share on Facebook to serve the advertisers (Facebook, 2009). Thus, Facebook users who do not read the privacy policy when signing up are unaware that Facebook will share their personal information with marketers. This is especially harmful when users set their profiles to public as it makes the advertisers and marketers able to collect their information for commercial exploitation with little effort. What's worse is that marketers' collecting the information teens share voluntarily on SNSs is not covered by COPPA. As a result, teens' personal information can be collected by someone they do not know and this could be damaging to teens in several ways: first, teens may feel scared or uncomfortable when they are contacted by strangers

and researchers have warned the possibility of online stalking or cyber bullying (Trepte & Reinecke, 2011); second, teens may become identity theft victims when strangers steal their personal information to commit crimes; third, teens may receive online advertising that is inappropriate for their age; fourth, teens may be bothered by unwanted commercial emails (Moscardelli & Divine, 2007; Youn, 2008).

Since teens spend increasing time on SNS such as MySpace and Facebook and many marketers target teens through SNS, there are worries about teens' lack of privacy concern on SNSs (Peter, Valkenburg, & Fluckiger, 2009). Yet, previous research on teens' concern about online privacy provided mixed results. Some studies noted that with the wider spread of SNSs among the general population, sensitivity to privacy issues may have increased significantly among teens. Lenhart and Madden's (2007) survey in 2006 revealed that 66% of teens limited others' access to their profiles on SNSs. In addition, through conducting 18 focus groups with young people aged 9–19, Bryce and Fraser (2014) found out that while the majority of the respondents have a high level of awareness of the risks associated with their online behaviors, they perceived disclosure of personal information online to be important for the development of peer relationships and discussed strategies for evaluating trust and verifying identity. Nevertheless, results from content analyses of profiles on SNSs are not fully consistent with findings from surveys or interviews. A study of Facebook profiles in 2006 revealed that 40% of teen users restricted access to their profiles (Hinduja & Patchin, 2008). Regarding the diverging research results, Peter et al. (2009) mentioned that different study designs may account for the inconsistent findings and the majority of respondents in survey and interview may give the socially desirable answer that they protect their profiles, while actually, they do not. For instance, after surveying 235 Facebook users about their privacy settings and then reviewing 102 of the 235 participants' Facebook profiles, Butler, McCann, and Thomas (2011) noted the inconsistency between participants' actual personal privacy settings and reported privacy settings. Given these inconsistent results in teens' online privacy concern, this study explores the significant socialization agents that influence teens' privacy concern.

2.3. Generation gap and parental influence

Parents are concerned about online dangers teens may face (Livingstone, 2002; Turow & Nir, 2000). The prevailing concern that parents have is how Internet use may lead teens to perform activities that risk their own privacy (Ou, 2011). One public debate about online privacy is whether SNS such as Facebook should expose user data to third-party developers (Felt & Evans, 2008; Strater & Richter, 2007). With the prevailing online marketing to teens and teens' negligence of the privacy policy, parents are concerned about whether third parties such as advertisers and marketers can access their child's information online (Ou, 2011). Moreover, previous studies indicated that because parents are significantly more thoughtful about privacy, there may be some disparities in perceived danger online between teens and their parents or caregivers (Herring, 2008; Ou, 2011).

Even though disparities in reported privacy concern between parents and teens exist, researchers have emphasized the role of parents as one of the most important socialization agents in the process through which teens obtain and develop a broad range of attitudes, knowledge, and social skills (Carlson, Grossbart, & Stuenkel, 1992; Cram & Ng, 1999). Moreover, as an important socialization agent, parents shape the way young people gain consumer norms and marketplace knowledge (Moore & Moschis, 1981; Moschis, 1985), especially when their child's consumption behaviors involve risks (Youn, 2008). In an effort to help teens cope with potential

risks, parents employ various strategies including parent–child discussions, rule-making, reinforcement, and modeling (Koesten & Anderson, 2004; Moore, Raymond, Mittelstaedt, & Tanner, 2002). For instance, with regard to online marketers' information collection practices, parents can discuss with their child about the negative effects of those information collection practices and help their child foster critical views on privacy issues (Rose, Bush, & Kahle, 1998). Also, parents can set rules to impose more limits on their child's information disclosure to online marketers as well as co-surf the Internet with their child to set a model to follow (Youn, 2008). Compared to younger children, teens have been presumed to be less affected by their parents (Nathanson, 2001). Nevertheless, previous studies did not detect any influence of peer groups on teens' privacy concerns (Moscardelli & Divine, 2007; Youn, 2008). Given that marketers collect information teens share on SNSs and this information collection makes teens involved with a variety of risks such as spam, fraud, or conflicts with parents (Grant, 2005; Youn, 2005), parental influence is expected to be one of the most significant socialization agents in increasing teens' level of online privacy concern. Based on the above discussion, the following hypotheses were developed:

H1. Parents or guardians tend to be more concerned about their children's online data being collected by marketers than their children do.

H2. Teens whose parents or guardians are more concerned about their children's online data being collected by marketers are likely to have higher level of privacy concern.

2.4. SNS use and privacy concern

Along with parents, another main socialization agent for teens is media (Higby & Mascarenhas, 1993; Mangleburg & Bristol, 1998; Moscardelli & Divine, 2007). Previous studies on both traditional media (i.e. television, newspaper, magazine, and radio) and new media (i.e. the Internet) have found out that greater experience with media may help teens to develop consumer knowledge of advertising practices (Higby & Mascarenhas, 1993; Mangleburg & Bristol, 1998; Moscardelli & Divine, 2007). Moreover, in the context of understanding the development of online marketing knowledge and SNS privacy concerns by teens, the most relevant media would seem to be SNSs. First, Moscardelli and Divine (2007) noted that heavier users of the Internet may be more aware of the potential risks related to divulging information online because their heavy usage may have kept them abreast of the latest online environment such as online marketers' information collection practices. Thus, we may assume that heavier SNS users who are more familiar with the social marketing atmosphere may be more concerned about whether third parties (i.e. marketers and advertisers) can access their personal information on SNSs and therefore are more inclined to read privacy policies on SNSs and keep their profiles private. Second, Lewis et al. (2008) suspected that more active Facebook users may have disclosed more information on their Facebook profiles and thus may have "more to hide" (p. 82). Since heavier SNS users have gained more knowledge of the techniques on SNSs, they may be more likely to know how to manage the privacy controls on SNSs to protect their private information (Liu, Gummadi, Krishnamurthy, & mislove, 2011; Moscardelli & Divine, 2007). Regarding the role of SNS use as one of the socialization agents, we have constructed the following hypothesis:

H3. Frequency of SNS use is positively related to teens' level of privacy concern about their online data being collected by marketers.

2.5. Level of privacy concern and privacy-protecting behaviors on SNSs

An area of concern for parents and educators is the level of personal information teens disclose online. Since a distinctive feature of SNSs is that they create an online platform for individuals to share their virtual profiles, and to make connections with other members (Ellison & boyd, 2013), it seems hard to stop teens' voluntary information disclosure on SNSs. Thus, on one hand, teens may be concerned about their online privacy; on the other hand, teens may still be willingly to post their personal information on SNSs and to share information with family and friends, which is a "privacy paradox" discussed by Barnes (2006). So how will teens' privacy concern influence their privacy-setting strategies on SNSs and profile setting options on Facebook?

Research has shown that people's concern about online information privacy is positively related to the privacy-protecting strategies they take. Son and Kim (2008) found that online information concerns will lead consumers to take private actions including removal of personal information from online companies' databases. Survey with teenagers showed that as teens' concern for privacy increases, they will be more likely to adopt protective behaviors to guard their privacy (Mohamed & Ahmad, 2012; Moscardelli & Divine, 2007). In the context of social media, through analyzing user responses to the Facebook privacy policy, Bulgurcu, Cavusoglu, and Benbasat (2010) noted that Facebook privacy concern can result in behavioral outcomes such as quitting Facebook or the application, limiting socialization, giving false information, or even terminating connections. Moreover, Young and Quan-Haase (2009) found that privacy concern is positively related to protection behavior on Facebook, most of which are the use of private email messages and altering the default privacy settings. On the basis of the aforementioned discussion, we have developed the following two hypotheses:

H4. Teens who are more concerned about their online data being collected by marketers are likely to implement more privacy-setting strategies on SNSs.

H5. Teens who are more concerned about their online data being collected by marketers are more likely to set their Facebook profiles to private.

3. Methods

3.1. Data source

The data for this study were drawn from the Teens & Privacy Management Survey conducted by Princeton Survey Research Associates International for Pew Internet & American Life Project between July 26 and September 30, 2012. The survey data were collected from telephone interviews and the survey was a combination of landline and cellular random digit dial (RDD) samples with access to either a landline or cellular telephone. Also, besides the fresh RDD sample, interviews were also completed among a sample of parents who recently participated in the PSRAI Weekly Omnibus survey (Madden, Cortesi, Gasser, Lenhart, & Duggan, 2012). The total sample consisted of 802 parents and their 802 teens aged 12 to 17, including 270 cell phone interviews (134 fresh cell phone interviews and 136 callback cell phone interviews) and 532 landline interviews (267 fresh landline interviews and 265 callback landline interviews). For each responding household, an interview was conducted with a parent or guardian first, and then, a subsequent interview was conducted with a teenager living with the parent/guardian respondent. Interviews were conducted in

English and Spanish and on landline and cell phones. The response rate was 16.1% for the fresh landline sample, 12.4% for the fresh cell phone sample, 37.7% for the callback landline sample, and 30.2% for the callback cell phone sample (Madden et al., 2012). Results from independent-samples t-test showed no difference in response rate between the fresh landline sample and the fresh cell phone sample, t (df = 399) = .98, p = .33 > .05; also, independent-samples t-test results showed no difference in response rate between the callback landline sample and the callback cell phone sample, t (df = 399) = 1.49, p = .14 > .05. The final sample in this study only included Facebook users (N = 622).

3.2. Measurements

Teens' Facebook use was the filter question and was measured through one question by asking teen respondents: "Please tell me whether you ever use a social networking site like Facebook?" The responses were re-coded so that 1 represents *yes*, and 2 represents *no* or *cannot do that/don't know how to do that*.

Teens' level of SNS use was measured through one question: "About how often do you visit social networking sites?" The responses were reverse-coded so that 1 represents *less often*, 2 represents *every few weeks*, 3 represents *1 to 2 days a week*, 4 represents *3 to 5 days a week*, 5 represents *about once a day*, and 6 represents *several times a day*.

Parents' level of privacy concern about their children's online data being collected by marketers was measured through one question by asking parents/guardians: "Please tell me how concerned, if at all, you are about how much information advertisers can learn about your child's online behavior?" The responses were reverse-coded so that 1 represents *not at all concerned*, 2 represents *not too concerned*, 3 represents *somewhat concerned*, and 4 represents *very concerned*.

Teens' level of privacy concern about their online data being collected by marketers was measured through one question by asking teen respondents: "Thinking again about the social network site that you use most often, how concerned are you, if at all, that some of the information you share on the site might be accessed by third parties, like advertisers or businesses without your knowledge?" The responses were reverse-coded so that 1 represents *not at all concerned*, 2 represents *not too concerned*, 3 represents *somewhat concerned*, and 4 represents *very concerned*.

Teens' implementation of privacy-setting strategies was measured through seven questions: "Thinking about the ways people might use social networking sites... (a) Do you ever delete people from your network or friends' list? (b) Do you ever remove your name from photos that have been tagged to identify you? (c) Do you ever delete comments that others have made on your profile or account? (d) Do you ever delete or edit something that you posted in the past? (e) Do you ever post fake information like a fake name, age or location to help protect your privacy? (f) Do you ever block people? (g) Do you ever delete or deactivate a profile or account?" The responses for each of the seven questions were re-coded so that 1 represents *yes*, and 0 represents *No*. Answers to the seven questions were collapsed together to construct the new variable of implementation of various privacy-setting strategies, and the reliability of the seven-item measurement achieved an acceptable level (Cronbach's α = .63) (George & Mallery, 2003). Thus, every respondent received a score ranging from 0 to 7, and the higher the score, the more strategies one has adopted.

Teens' Facebook profile visibility was measured through one question by asking teen respondents: "Still thinking about your Facebook profile... Is your profile set to public so that everyone can see it... is it partially private, so that friends of friends or your networks can see it... or is it private, so that only your friends can see?" In the responses, 1 represents *public*, 2 represents *partially private*, and 3 represents *private (friends only)*.

Demographic variables examined in this study included age, gender, education, race, and household income of the parents or guardians, and age and gender of the teen respondents.

3.3. Data analysis

To analyze the role of parents in teens' Facebook privacy setting options, this study only looked at teenage respondents who answered "yes" to the Facebook use question and their parents. To test H1, we conducted an independent-samples t-test. To test simultaneously H2–5, which comprised a hypothesized integrated model (see Fig. 1), we performed a path analysis using IBM AMOS 21. For every variable included in the model, we controlled for the influence from age, gender, education, race, and household income of the parents or guardians, and age and gender of the teenage respondents. We chose path analysis because this approach allows for the estimation of all parameters in a model simultaneously after controlling for all other factors and relationships in the model (Meyers, Gamst, & Guarino, 2006).

4. Results

4.1. Respondent characteristics

In the whole sample, 622 out of 802 (78%) teenage respondents answered "yes" to the question "Please tell me whether you ever use a social networking site like Facebook?" The average age of teenage Facebook users was 15 (SD = 8.63) and about 49 percent were boys. The average age of parent/guardian respondents of teen Facebook users was 47 (SD = 1.60). Among the parent/guardian respondents of teenage Facebook users, 64 percent were female, 45 percent had a college degree, 59 percent had household income of $50,000 or higher, and 77 percent were White.

In terms of privacy-setting strategies on SNSs, 76 percent of teen SNS users reported that they have ever deleted people from their network or friends' list, 48 percent of teen SNS users informed that they have ever removed their names from photos that have been tagged to identity them, 53 percent of teen SNS users noted that they have ever deleted comments that others have made on their profiles or accounts, 62 percent of teen SNS users indicated that they have ever deleted or edited something that they posted in the past, 27 percent of teen SNS users reported that they have ever posted fake information like a fake name, age or location to help protect their privacy, 57 percent of teen SNS users indicated that they have ever blocked people, and 30 percent of teen SNS users noted that they have ever deleted or deactivated a profile or account (see Table 1).

When it comes to Facebook profile visibility, 12 percent of teen Facebook users reported that they set their Facebook profile to
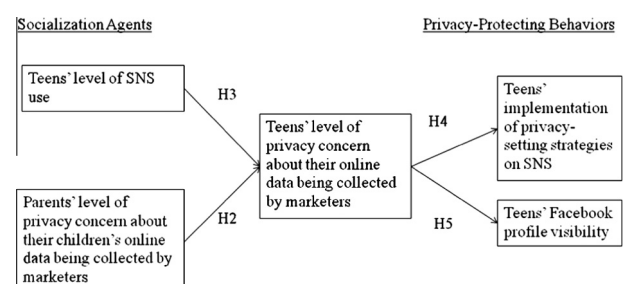

Fig. 1. The hypothesized model.

Table 1
Teens' use of privacy-setting strategies on SNS.

Privacy-setting strategies on SNS	Number of teen SNS users who reported that they have adopted the strategy
Delete people from their network or friends' list	471 (76%)
Remove their names from photos that have been tagged to identity them	298 (48%)
Delete comments that others have made on their profiles or accounts	327 (53%)
Delete or edit something that they posted in the past	382 (62%)
Post fake information like a fake name, age or location to help protect their privacy	170 (27%)
Block people	354 (57%)
Delete or deactivate a profile or account	188 (30%)
N	622

Notes: For every variable included in the model, we controlled for the influence from age, gender, education, race, and household income of the parents or guardians, and age and gender of the teenage respondents.
The coefficients are standardized. R-square values are reported in parentheses.
$*p < .05$ $**p < .01$ $***p < .001$

Fig. 2. Path analysis for the hypothesized model.

public, 23 percent of teen Facebook users reported that they set their Facebook profile to partially private, 58 percent of teen Facebook users reported that they set their Facebook profile to private (friends only), and 7 percent of teen Facebook users answered either "Don't Know" or "Refused" to the Facebook profile visibility question.

4.2. Hypotheses testing

First, results from independent-samples t-test indicated a generation gap in online privacy concern, with parents/guardians having significantly higher level of concern ($M = 3.20$, $SD = .91$) than their children ($M = 2.29$, $SD = .87$) (t ($df = 1227$) = 17.83, $p < .001$). Therefore, H1, which suggested that parents are more concerned about their children's online data being collected by marketers than their children, received support.

Followed, the data of the 622 teen Facebook users and their parents/guardians were entered into the hypothesized model. The AMOS results showed that chi-square statistics for the hypothesized model was non-significant ($\chi^2 = 3.82$, $df = 4$, $p = .43$), and other indices (RMSEA = 0, NFI = .94, CFI = 1.00) suggested a good model fit (Meyers et al., 2006). The integrated model accounted for 6% in teens' implementation of privacy-setting strategies on SNS and for 1% in teens' Facebook profile visibility. Below are the analysis results for each hypothesis.

Results from the path analysis provided support for H2, which posited a positive relationship between parents' level of privacy concern about their children's online data being collected by marketers and teens' level of privacy concern about their online data being collected by marketers ($B = .12$, $p < .01$). H3, which predicted that heavier SNS teen users are more concerned about their online data being collected by marketers, was supported ($B = .12$, $p < .01$). Moreover, results showed that teens who are more concerned about their online data being collected by marketers are more likely to implement privacy-protecting behaviors, such as adopting more privacy-setting strategies on SNS ($B = .17$, $p < .001$) (H4 was supported) and setting their Facebook profiles to private ($B = .10$, $p < .05$) (H5 received support). Besides the established hypotheses, results from path analysis also revealed that teens who spend more time on SNS are likely to adopt more privacy-setting strategies on SNS ($B = .14$, $p < .001$), providing empirical evidence for the socialization agent role of SNS use (see Fig. 2).

4.3. Demographic influence on variables in the hypothesized model

Due to the small variance accounted by the variables in the proposed model, this study also explored the demographic factors that have significant influence on the five variables included in the hypothesized model (see Table 2). Results from multiple regression
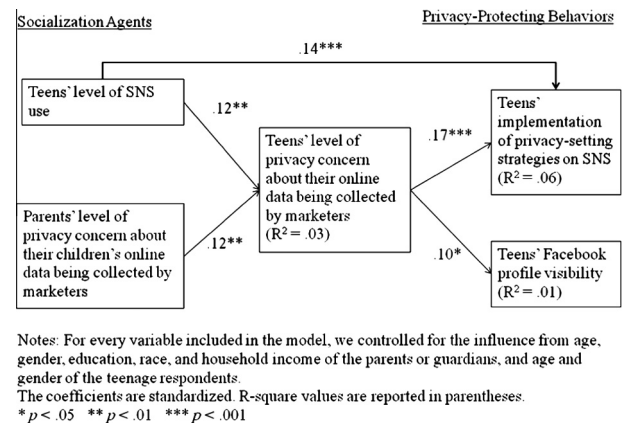
indicated no significant demographic influence on parents' level of concern about their children's online data being collected by marketers. Nevertheless, multiple regression results indicated that the more education parents have, the higher level of concern their children have about their online data being collected by marketers ($B = .16$, $p < .01$). Moreover, multiple regression results revealed that girls ($B = .10$, $p < .05$) and older teens ($B = .15$, $p < .001$) are more likely to use SNS, that girls ($B = .22$, $p < .001$) and older teens ($B = .10$, $p < .05$) implement more privacy-setting strategies on SNS, and that girls are more likely to set their Facebook profiles to private than boys ($B = .20$, $p < .001$).

4.4. Landline sample versus cell phone sample

In the SPSS database, the sample type was divided into two: landline and cell. Therefore, we combined the fresh sample with the call back sample (the total landline sample included the fresh landline sample and the call back landline sample, and the total cell phone sample included the fresh cell phone sample and the call back cell phone sample). To examine if the interview mode had an influence on participants' responses, we conducted independent-sample t tests and results showed that the landline sample and the cell phone sample did not differ in our key variables including parents' and teens' privacy concern, teens' Facebook profile visibility, and privacy-setting strategies in the hypothesized model (see Table 3).

To explore if the interview mode made a difference in the representativeness of the two samples, we conducted nine t-tests and three chi-square tests (see Tables 3 and 4). To control for type one error, we used Bonferroni correction for each t-test and chi-square test by dividing the acceptable familywise error rate (0.05) by the number of tests (p-value for each t-test = 0.0056, p-value for each chi-square test = 0.0167) (Tabachnick & Fidell, 2007). Consistent with Hill, Tchernev, and Holbert's (2012) study, t-test and chi-square test results indicated that participants in the cell phone sample were younger ($M_{age} = 45.56$, $SD_{age} = 8.28$) and had lower income level ($M_{income} = 5.27$, $SD_{income} = 2.44$) than those in the landline sample ($M_{age} = 47.88$, $SD_{age} = 8.72$; $M_{income} = 6.08$, $SD_{income} = 2.22$) (see Table 3), and that there were more male participants in the cell phone sample and more female participants in the landline sample (see Table 4).

5. Discussion

When examining online privacy issue, many previous studies have focused on self-disclosure (Ou, 2011; Shin, Huh, & Faber, 2012). However, teens' voluntary information disclosure on Facebook is difficult to be curbed, because SNSs provide a platform

Table 2

Multiple regression analyses predicting teens' level of SNS Use, parents' level of privacy concern, teens' level of privacy concern, teens' implementation of privacy-setting strategies on SNS, and teens' facebook profile visibility.

Dependent variables	V1	V2	V3	V4	V5
Predictor	B[a]	B[a]	B[a]	B[a]	B[a]
Demographic factors					
Parents' gender (1 = male, 2 = female)	.04	.05	−.09	.04	0
Parents' age	−.01	.03	−.03	−.04	−.03
Parents' education	−.01	−.03	.16**	.09	.03
Household income	.19	−.08	−.06	.01	.07
Parents' race (1 = white, 0 = non-white)	.03	.00	−.01	−.01	.06
Children's age	.15***	−.07	.01	.10*	.04
Children's gender (1 = male, 2 = female)	.10*	.01	.08	.22***	.20***
R^2	.07	.02	.03	.07	.05

V1 (teens' level of SNS use), V2 (parents' level of privacy concern about their children's online data being collected by marketers), V3 (teens' level of privacy concern about their online data being collected by marketers), V4 (teens' implementation of privacy-setting strategies on SNS), and V5 (teens' Facebook profile visibility).
* $p < .05$.
** $p < .01$.
*** $p < .001$.
[a] Standardized beta coefficient.

Table 3

T-test results for sample comparison.

Variables	Landline (N = 532)		Cell phone (N = 270)		t	P
	M	SD	M	SD		
Parents' age	47.88	8.72	45.56	8.28	3.21	.001*
Parents' education	5.07	1.64	4.79	1.62	2.06	.039
Household income	6.08	2.22	5.27	2.44	3.95	<.001*
Children's age	14.89	1.61	15.02	1.58	0.99	.324
V1	4.72	1.5	4.77	1.44	0.47	.641
V2	3.2	0.9	3.19	0.92	0.14	.891
V3	2.27	0.87	2.33	0.88	0.82	.413
V4	3.46	1.88	3.66	1.81	1.25	.213
V5	2.49	0.71	2.49	0.73	0.01	.991

V1 (teens' level of SNS use), V2 (parents' level of privacy concern about their children's online data being collected by marketers), V3 (teens' level of privacy concern about their online data being collected by marketers), V4 (teens' implementation of privacy-setting strategies on SNS), and V5 (teens' Facebook profile visibility).
* $p < .0056$.

Table 4

Chi-square test results for sample comparison.

Variables	Landline (N = 409)		Cell Phone (N = 213)		χ^2	P
	Male (N%)	Female (N%)	Male (N%)	Female (N%)		
Parents' gender	131 (32%)	278 (68%)	93 (44%)	120 (56%)	8.23	.004*
Children's gender	206 (50%)	203 (50%)	98 (46%)	115 (54%)	1.06	.302
Parents' race	White (N%)	Non-white (N%)	White (N%)	Non-white (N%)		
	320 (79%)	84 (21%)	154 (73%)	57 (27%)	3.04	.081

* $p < .0167$.

for users to share information and to build relationships with others (boyd & Ellison, 2008). Therefore, this study chose to investigate teens' privacy-setting strategies on SNS and profile visibility on Facebook. In particular, this study examined the influences of two socialization agents: parental mediation and SNS usage. Results supported the role of parents' privacy concern and SNS use in motivating teens to increase online privacy concern, which, in turn, drives teens to adopt more privacy-setting strategies on SNSs and to set their Facebook profiles to private.

First, we found that parents are more concerned about their children's online data being collected by marketers than their children are. Moreover, there is a positive relationship between parents' level of privacy concern and teens' level of privacy concern. As an important socialization agent, parents can influence their children's attitudes and behaviors through parental mediation that involves monitoring and controlling their children's media consumption (Shin & Huh, 2011; Shin et al., 2012). Previous studies

(Shin & Huh, 2011; Shin et al., 2012) have identified two types of parental mediation: first, active mediation, which refers to parents' discussing with children the undesirable aspects of media contents and desirable ways of media consumption; second, restrictive mediation, which refers to parents' setting rules to control children's media usage in terms of appropriate media content and media exposure time. Moreover, Youn (2008) found out while active mediation was positively associated with teens' online privacy concerns, restrictive mediation was unrelated to teens' online privacy concerns. Future studies can differentiate different types of parental mediation and examine the specific mechanism behind parents' influence on teens' SNS privacy concern.

Regarding the role of parents as an important socialization agent, this study explored demographic influence on parents' level of privacy concern. However, results from multiple regression showed no demographic influence on parents' level of privacy concern. It seems that other factors may have played a more

important role in influencing parents' privacy concern. Shin and Huh (2011) identified parents' presumed influence of media as an antecedent of parental mediation. Therefore, it is possible that how parents/guardians perceive the influence of using SNSs on their children can affect parents' privacy concern. Previous studies have discussed the double-edge role of SNSs: on the one hand, they bring more educational opportunities for youths and on the other hand, they carry potential risks and dangers (Flichy, 2002; Livingstone, 2002). Thus, educational programs targeting parents/guardians may need to emphasize the potential risks associated with teens' SNS use so that to enhance parents' presumed negative influence of SNSs on their children.

Second, besides parental influence, this study identified SNS usage as another important socialization agent that increases teens' level of privacy concern about marketers' collection of their information shared on SNSs. This result is consistent with previous findings from research on the relationship between media usage and the development of consumer knowledge and skepticism (Mangleburg & Bristol, 1998; Mascarenhas & Higby, 1993). Since SNS usage is an important socialization agent, this study explored the demographic factors that have a significant influence on teens' level of SNS use. Findings from this study indicated that female teens tend to use SNSs more frequently than male teens do, and that older teens spend more time on SNSs than younger ones do. In regard to the positive relationship between the frequency of SNS use and teens' level of privacy concern, it is noted that more educational programs targeting SNS light users, especially younger male teens, are in need to increase their privacy concern.

Third, in terms of demographic influence on teens' online privacy concern, findings from multiple regression revealed that teens whose parents/guardians have higher educational level tend to be more concerned about their online privacy. Previous research noted that highly educated parents showed a tendency to engage in active mediation compared to less educated parents (Valkenburg, Mrcmar, Peeters, & Marseille, 1999), which may explain the difference in privacy concern between the children of highly educated parents and those of less educated parents. Moreover, our finding regarding the non-significant relationship between gender and teens' level of privacy concern is inconsistent with previous studies that discovered that female teens were more concerned about online privacy (Moscardelli & Divine, 2007; Youn, 2005). Additionally, even though older teens tend to spend more time on SNSs than younger ones, they do not have higher privacy concern than younger ones, and this results is consistent with Moscardelli and Divine's (2007). It is possible that older teens may gain more SNS knowledge including the potential risks through using them; however, as teens grow older, their desire to get more social connections increases and they are more apt to disclose their personal information online (Lenhart & Madden, 2007), which may cause them to ignore the potential risks associated with their online behaviors. Thus, establishing age-specific educational programs may be essential for heightening teens' online privacy concern.

Fourth, we found significant relationships between teens' level of privacy concern about their online information being collected by marketers and their privacy-setting strategies on SNSs as well as the likelihood for them to set their Facebook profiles to private. For teens who are more concerned with their online privacy, they are more likely to set their profiles to private or partially private, and they adopt more privacy protective strategies, providing support for previous studies (Bulgurcu et al., 2010; Mohamed & Ahmad, 2012; Moscardelli & Divine, 2007). Descriptive data analysis showed that "delete people from their network or friends' list" is the most common strategy that teens tend to take to protect their privacy on SNSs (76% teen Facebook users have adopted this strategy), followed by "delete or edit something that they posted

in the past" (62% teen Facebook users have used this strategy) (see Table 1). These findings have implications for parents, educators, and policy makers that increasing teens' concern for their online privacy will lead to greater use of privacy- protecting strategies and increase their online safety.

In terms of demographic influence on teens' privacy-protecting behaviors on SNSs, this study identified gender and age as the only significant demographic factors. In particular, female teens are more likely to set their Facebook profiles to private than male teens and to adopt more privacy-setting strategies, echoing findings from previous studies (Lewis et al., 2008; Nosko et al., 2012; Taraszow et al., 2010). However, it still remains a question why female teens did not have higher privacy concern but were more likely to set their Facebook profiles to private and to adopt more privacy-setting strategies. It is possible that both female ($M = 2.24$, $SD = .88$) and male teens ($M = 2.34$, $SD = 86$) are somewhat concerned about their online privacy; however, previous research noted that females have a greater fear of danger than males (Harris & Miller, 2000) and therefore are more inclined to adopt more privacy-setting strategies and to set their Facebook profiles to private to avoid being victims. Moreover, results showed that older teens tend to implement more privacy-setting strategies than younger ones. It is possible that as teens grow older, they know more ways to manage the privacy controls after spending more time on SNSs, and this is in line with previous research showing that older teens have more knowledge and experience in the marketplace than younger ones (Moschis & Churchill, 1978).

A final note to address is that even though Facebook claimed that they set rules to ensure that third parties adopt Facebook users' information in a manner consistent with the users' privacy settings, Facebook also pointed out, "we cannot guarantee that they (third parties) will follow our rules" (Facebook, 2009). Regarding third parties' collecting personal information online, some scholars call for government regulation. Their calls seek legislation that would set strict limits on how marketers collect personal data online, on what types of personal data marketers can collect, and on how marketers can use the data (Kirsch, 2011; Strauss & Rogerson, 2002).

Besides government regulation, others call for industry self-regulation. Since teens' privacy issues are not protected under COPPA, Moscardelli and Liston-Heyes (2011) noted,

In lieu of engaging in purposeful behaviors that protect privacy online, adolescents must depend on industry self regulation. Ethical marketers are likely to voluntarily 'self regulate' by following policies and guidelines suggested by industry. For example members of the Direct Marketing Association (DMA) are encouraged to post online privacy policies and the DMA specifically recommends that marketers who market to children post notices to obtain parental permission before collecting information online (p.48).

Therefore, more industry self-regulations and government regulations that require third parties such as online advertisers and marketers to follow rules are in need.

6. Limitations and direction for future research

Although the findings from our study are significant, there are still several limitations. First, even though previous studies did not detect any influence of peer groups on privacy concerns (Moscardelli & Divine, 2007; Youn, 2008), Lewis, Kaufman and Christakis (2008) have found that college students who have more Facebook friends with private profiles are more likely to maintain a private profile. Such social influence are further amplified by SNS activity, because the more a person surfs on or browses Facebook, the more he/she is aware of the prevalence of private profiles among his/her

friends and thus is more likely to follow them and set their own profiles as private (Lewis et al., 2008). Therefore, future studies may need to explore the influence of peer groups on teens' privacy-protecting behaviors on SNSs. Second, except for teens' implementation of privacy-setting strategies, the survey used only one question to measure each variable, which may reduce the validity of the measurement. Future studies may consider using multiple items to measure those variables to enhance reliability. Third, even though all the hypotheses in this study were supported, the exogenous variables accounted for little variance in the endogenous variables in the hypothesized model, which was also the case in the previous studies (Shin et al., 2012; Youn, 2008). Regarding the low variance accounted by the two socialization agents, we have the following suggestions for future studies: first, all the demographic influence has been controlled in the hypothesized model and when the demographic influence is added to the model, more variance will be accounted; second, more mediators such as active parental mediation need to be added to the relationship between parents' level of privacy concern and teens' level of privacy concern, and more mediators such as peer influence need to be added to the relationship between teens' level of privacy concern and teens' Facebook profile visibility. Fourth, the survey adopted a combination of landline and cell phone RDD samples. The study discovered that while there were no differences in key variables included in the hypothesized model between the landline sample and the cell phone sample, there were significant age, income, and gender differences. However, we did not find any difference in response rate between the landline sample and the cell phone sample. Thus, the two sample methods could differ in representativeness but not in response rates or key variables of this study. Fifth, even though the fresh sample and the call back sample differed in response rate, the secondary SPSS dataset combined them together. Future studies may consider conducting two separate survey strata, one for fresh samples and one for call back samples, to test whether the two sample methods generate significantly different results for demographic information, for teens' SNS privacy concern, and for teens' privacy-protecting behaviors on SNSs. Finally, since the study used secondary data and adopted quantitative methods to analyze parental influence and SNS usage influence, the mechanism behind parent–child relationship and behind teens' SNS usage patterns were not touched upon. Future studies may combine both qualitative and quantitative methods to explore further how parents' online privacy concern influences their children's online privacy concern, and how teens' SNS use increases their online privacy concern.

References

Aldhafferi, N., Watson, C., & Sajeev, A. S. M. (2013). Personal information privacy settings of online social networks and their suitability for mobile Internet devices. *International Journal of Security, 2*(2). <http://arxiv.org/ftp/arxiv/papers/1305/1305.2770.pdf> Retrieved April 2013.

Barnes, S. B. (2006). A privacy paradox: Social networking in the United States. *First Monday, 11*(9).

Boveda-Lambie, A. M., & Hair, N. (2012). Advertising versus invertising: The influence of social media B2C efforts on consumer attitudes and brand relationships. In Angeline. G. Close (Ed.), *Online consumer behavior: Theory and research in social media, advertising, and e-tail* (pp. 209–236). New York, NY: Routledge.

boyd, d. m., & Ellison, N. B. (2008). Social network sites: Definition, history, and scholarship. *Journal of Computer-Mediated Communication, 13*, 210–230.

Bryce, J., & Fraser, J. (2014). The role of disclosure of personal information in the evaluation of risk and trust in young peoples' online interactions. *Computers in Human Behavior, 30*, 299–306.

Bulgurcu, B., Cavusoglu, H., & Benbasat, I. (2010). Understanding emergence and outcomes of information privacy concerns: A case of Facebook. *Proceedings of 31st International Conference on Information Systems.* <http://people.commerce.ubc.ca/phd/bulgurcu/docs/2010_ICIS_Bulgurcu.pdf>.

Butler, E., McCann, E., & Thomas, J. (2011). Privacy setting awareness on Facebook and its effect on user-posted content. *Human Communication, 14*(1), 39–55.

Carlson, L., Grossbart, S., & Stuenkel, J. K. (1992). The role of parental socialization: Types of differential family communication patterns regarding consumption. *Journal of Consumer Psychology, 1*(1), 31–52.

Cram, F., & Ng, S. H. (1999). Consumer socialization. *Applied Psychology: An International Review, 48*(3), 297–312.

Debatin, B., Lovejoy, J. P., Horn, A. K., & Hughes, B. N. (2009). Facebook and online privacy: Attitudes, behaviors, and unintended consequences. *Journal of Computer-Mediated Communication, 15*(1), 83–108.

Ellison, N. B., & boyd, d. (2013). Sociality through Social Network Sites. In W. H. Dutton (Ed.), *The oxford handbook of internet studies* (pp. 151–172). Oxford, UK: Oxford University Press.

Facebook. (2009). Facebook's privacy policy – full version. <https://www.facebook.com/note.php?note_id=%20322194465300>.

Felt, A., & Evans, D. (2008). Privacy protection for social networking APIs. *Proceedings of Web 2.0 Security and Privacy* 2008.

Flichy, P. (2002). New Media History. In L. Lievrouw & S. Livingstone (Eds.), *The handbook of new media: Social shaping and consequences of ICTs* (pp. 136–150). London: Sage.

Garfinkel, S. (2000). *Database nation.* Sebastopol, CA: O'Reilly.

George, D., & Mallery, P. (2003). *SPSS for Windows step by step: A simple guide and reference* (4th ed.). Boston, MA: Allyn & Bacon.

Grant, I. C. (2005). Young people's relationships with online marketing practices: An intrusion too far? *Journal of Marketing Management, 21*, 607–623.

Grant, I. C. (2006). Online privacy––An issue for adolescents? *Proceedings of the Child and Teen Consumption 2006.* Copenhagen, Denmark.

Guo, Y. (2010). The privacy issue on social network sites: Facebook. *3pm Journal of Digital Research &Publishing.* <http://3pmjournal.blogspot.com/2010/10/privacy-issue-on-social-network-sites.html>.

Harris, M. B., & Miller, K. C. (2000). Gender and perceptions of danger. *Sex Roles, 43*(11/12), 843–863.

Herring, S. (2008). Questioning the generational divide: Technological exoticism and adult constructions of online youth identity. In D. Buckingham (Ed.), *Youth, identity, and digital media.* Cambridge, UK: MIT Press.

Higby, M. A., & Mascarenhas, O. A. J. (1993). Media, parent, and peer influences in teen food shopping. *The Journal of Marketing Management, Fall/Winter*, 45–55.

Hill, M. R., Tchernev, J. M., & Holbert, R. L. (2012). Do we need to go cellular? Assessing political media consumption using a single-frame landline/cellular survey design. *Mass Communication & Society, 15*(2), 284–306.

Hinduja, S., & Patchin, J. W. (2008). Personal information of adolescents on the internet: A quantitative content analysis of MySpace. *Journal of Adolescence, 31*(1), 135–146.

Hoy, M. G., & Milne, G. (2010). Gender differences in privacy-related measures for young adult Facebook users. *Journal of Interactive Advertising, 10*(2), 28–45.

Introna, L. D. (1997). Privacy and the computer: Why we need privacy in the information society. *Metaphilosophy, 28*(3), 259–275.

Kirsch, M. S. (2011). Do not track: Revising the EU's data protection framework to require meaningful consent for behavioral advertising. *Richmond Journal of Law and Technology, XVIII, 1*, 1–50.

Koesten, J., & Anderson, K. (2004). Exploring the influence of family communication patterns, cognitive complexity, and interpersonal competence on adolescent risk behaviors. *Journal of Family Communication, 4*(2), 99–121.

Lenhart, A., & Madden, M. (2007). *Teens, privacy and online social networks.* Pew Internet and American life project. <http://www.pewinternet.org/Reports/2007/Teens-Privacy-and-Online-Social-Networks/1-Summary-of-Findings.aspx>.

Lenhart, A., Madden, M., Smith, A., Purcell, K., Zickuhr, K., & Rainie, L. (2011). *Teens, kindness and cruelty on social network sites.* Pew Internet and American life project. <http://www.pewinternet.org/Reports/2011/Teens-and-social-media/Part-1/Facebook.aspx>.

Lessing, L. (1998). The architecture of privacy. Retrieved from <http://cyber.law.harvard.edu/works/lessig/architecture_priv.pdf>.

Lewis, K., Kaufman, J., & Christakis, N. (2008). The taste for privacy: An analysis of college student privacy settings in an online social network. *Journal of Computer-Mediated Communication, 14*(1), 79–100.

Liau, A. K., Khoo, A., & Ang, P. H. (2005). Factors influencing adolescents engagement in risky internet behavior. *CyberPsychology & Behavior, 8*(6), 513–520.

Liu, Y., Gummadi, P., Krishnamurthy, B., & mislove, A. (2011). Analyzing facebook privacy settings: User expectations vs. reality. In *Proceedings of the 2011 ACM SIGCOMM conference on Internet measurement conference, IMC '11* (pp. 61–70). New York, NY, USA: ACM. http://dx.doi.org/10.1145/2068816.2068823.

Livingstone, S. (2002). *Young people and new media.* London, UK: Sage.

Lohr, S. (2012). The age of big data. *New York Times.* <http://www.nytimes.com/2012/02/12/sunday-review/big-datas-impact-in-the-world.html?pagewanted=all&_r=0> Retrieved 11 February 2012.

Madden, M., Cortesi, S., Gasser, U., Lenhart, A., & Duggan, M. (2012). Parents, teens, and online privacy. Pew Internet and American life project. <http://www.pewinternet.org/Reports/2012/Teens-and-Privacy/Methodology/About-this-Study.aspx>.

Mangleburg, T. F., & Bristol, T. (1998). Socialization and adolescents' skepticism toward advertising. *Journal of Advertising, 27*(3), 11–21.

Mascarenhas, O. A. J., & Higby, M. A. (1993). Peer, parent, and media influences in teen apparel shopping. *Journal of the Academy of Marketing Science, 21*(1), 53–58.

Meyers, L. S., Gamst, G., & Guarino, A. J. (2006). *Applied multivariate research: Design and interpretation.* Thousand Oaks, CA: Sage.

Mohamed, N., & Ahmad, I. (2012). Information privacy concerns, antecedents and privacy measure use in social networking sites: Evidence from Malaysia. *Computers in Human Behavior, 28*(6), 2366–2375.

Moore, R. L., & Moschis, G. P. (1981). The role of family communication in consumer learning. *Journal of Communication, 31*(4), 42–51.

Moore, J. N., Raymond, M. A., Mittelstaedt, J. D., & Tanner, J. F. (2002). Age and consumer socialization agent influences on adolescents' sexual knowledge, attitudes, and behavior: Implications for social marketing initiatives and public policy. *Journal of Public Policy & Marketing, 21*(1), 37–52.

Moscardelli, D. M., & Divine, R. (2007). Adolescents' concern for privacy when using the Internet: An empirical analysis predictors and relationships with privacy-protecting behaviors. *Family and Consumer Sciences Research Journal, 35*(3), 232–252.

Moscardelli, D. M., & Liston-Heyes, C. (2011). Teens surfing the net: How do they learn to protect their privacy? *Journal of Business and Economics, 2*(9), 43–56.

Moschis, G. P. (1985). The role of family communication in consumer socialization of children and adolescents. *Journal of Consumer Research, 11*(March), 898–913.

Moschis, G. P., & Churchill, G. A. (1978). Consumer socialization: A theoretical and empirical analysis. *Journal of Marketing Research, 15*(4), 599–609.

Nathanson, A. (2001). Parent and child perspectives on the presence and meaning of parental television mediation. *Journal of Broadcasting & Electronic Media, 45*(2), 201–220.

Neuborne, E. (2001). For kids on the Web, it's an ad, ad, ad, ad world. *Business Week*, 108–109.

Nosko, A., Wood, E., Kenney, M., Archer, K., De Pasquale, D., Molema, S., et al. (2012). Examining priming and gender as a means to reduce risk in a social networking context: Can stories change disclosure and privacy setting use when personal profiles are constructed? *Computers in Human Behavior, 28*, 2067–2074.

Nowak, G., & Phelps, J. (1995). Direct marketing and the use of individual-level consumer information: Determining how and when "privacy" matters. *Journal of Direct Marketing, 9*(3), 46–60.

Ou, M. (2011). *Generation gap = Gap in online privacy perceptions? The case for Singaporean youths and their parents*. Papers presented at the annual meeting of the International Communication Association, Boston, MA.

Palen, L., & Dourish, P. (2003). Unpacking privacy for a networked world. In *Proceedings of the SIGCHI conference on Human factors in computing systems* (pp. 129–136). ACM.

Patriot Act. (2006). *USA PATRIOT Act.* Retrieved from <http://georgewbush-whitehouse.archives.gov/infocus/patriotact/>.

Peter, J., Valkenburg, P. M., & Fluckiger, C. (2009). Adolescents and social network sites; identity, friendships and privacy. In S. Livingstone & L. Haddon (Eds.), *Kinds online: Opportunities and risks for children* (pp. 83–94). Bristol, UK: The Policy Press.

Rose, G. M., Bush, V. D., & Kahle, L. (1998). The influence of family communication patterns on parental reactions toward advertising: A cross-national examination. *Journal of Advertising, 27*(4), 72–85.

Schonberger, J. (2005). *Emerging identity theft market targets teens as newest niche.* <http://newshour-tc.pbs.org/newshour/extra/features/july-dec05/idtheft_8-29.pdf>.

Sheehan, K. (2004). *Controversies in contemporary advertising*. Thousand Oaks, CA: Sage Publications Inc..

Shin, W., & Huh, J. (2011). Parental mediation of teenagers' video game playing: Antecedents and consequences. *New Media & Society, 13*(60), 945–962.

Shin, W., Huh, J., & Faber, R. (2012). Tweens' online privacy risks and the role of parental mediation. *Journal of Broadcasting & Electronic Media, 56*(4), 632–649.

Son, J. Y., & Kim, S. S. (2008). Internet users' information privacy-protective responses: A taxonomy and a nomological model. *MIS Quarterly, 32*(3), 503–529.

Strater, K. & Richter, H. (2007). Examining privacy and disclosure in a social networking community. *In Symposium on Usable Privacy and Security (SOUPS)*, Pittsburgh, PA, USA, July 2007.

Strauss, J., & Rogerson, K. S. (2002). Policies for online privacy in the United States and the European Union. *Telematics and Informatics, 19*(173), 173–192.

Tabachnick, B. G., & Fidell, L. S. (2007). *Experimental designs using ANOVA*. Belmont, CA: Thomson Higher Education.

Taraszow, T., Aristodemou, E., Shitta, G., Laouris, Y., & Arsoy, A. (2010). Disclosure of personal and contact information by young people in social networking sites: An analysis using Facebook profiles as an example. *International Journal of Media & Cultural Politics, 6*(1), 81–101.

Teenage consumer spending statistics. (2012). <http://www.statisticbrain.com/teenage-consumer-spending-statistics/> Retrieved 8 September 2012.

Trepte, S., & Reinecke, L. (Eds.). (2011). *Privacy online*. Heidelberg and New York: Springer.

Turow, J., King, J., Hoofnagle, C. J., Bleakley, A., & Hennessy, M. (2009). *Americans reject tailored advertising and three activities that enable it*. Technical report, Annenberg School for Communication,University of Pennsylvania.

Turow, J., & Nir, L. (2000). The Internet and the family: The view of U.S. parents. In C. C. Feilitzen (Ed.), *Children in the new media landscape: Games, pornography perceptions* (pp. 331–348). Göteborg, Sweden: Nordicom.

Valkenburg, P. M., Mrcmar, 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*(1), 53–66.

Westin, A. (1967). *Privacy and freedom*. New York: Atheneum.

Westin, A. F. (2002). *A classified bibliography of U.S. privacy surveys*. Hackensack, NJ: Center for social and legal research.

Westin, A. F. (2003). Social and political dimensions of privacy. *Journal of Social Issues, 59*(2), 431–453.

Wildemuth, B. M. (2008). The illusion of online privacy. <http://ils.unc.edu/~wildem/Publications/CHI2006-Privacy.pdf> Retrieved 5 June 2008.

Willard, N. (2007). *Cyberbullying and cyberthreats: Responding to the challenge of online social cruelty, threats, and distress*. Eugene, OR: Center for Safe and Responsible Internet Use.

Youn, S. (2005). Teenagers' perceptions of online privacy and coping behaviors: A risk-benefit appraisal approach. *Journal of Broadcasting & Electronic Media, 49*(1), 86–110.

Youn, S. (2008). Parental influence and teens' attitude toward online privacy protection. *The Journal of Consumer Affairs, 42*(3), 362–388.

Young, A. L., & Quan-Haase, A. (2009). Information revelation and internet privacy concerns on social network sites: a case study of Facebook. In *Proceedings of the fourth international conference on Communities and technologies* (pp. 265–274). ACM.