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Offline Status, Online Status: Reproduction of Social Categories in Personal Information Skill and Knowledge

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Abstract

This study tested the reproduction hypothesis that the Internet produces positive payoffs for those in privileged social positions, while disfavoring marginalized communities. Using a national sample of adult Internet users ($n = 419$), the first premise of this study investigated the impacts of (1) sociodemographic status, (2) Internet access indicators, and (3) their interactions on the variations of capabilities, as assessed through discrete measures of Internet-related personal information skill and knowledge. The second premise introduced the factor of individual motivation in interaction with sociodemographics and Internet access indicators. Hierarchical logistic regressions showed manifest age and gender disparities, with the significant interactions indicating that Internet access exacerbates existing offline status disparities. The reinforcement of digital divide was particularly salient in knowledge dimensions. The findings are discussed with regard to the conditions that incubate systematic differences in people's ability to understand or resist data surveillance. Implications for policy initiatives are offered.

Keywords

digital divide, Internet, surveillance, Internet-related personal information skill and knowledge and social stratification

Internet data surveillance is a ubiquitous part of digital lives. It is no longer possible for users to engage in online activities without having their digital identities collected, transferred, and retained in an array of corporate and government surveillance. Individuals' ability to control against unwarranted surveillance is a critical dimension of civic power in sustaining democracy (Castells, 2003). As the digitalization of personal information becomes omnipresent, the preexisting divide between

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marginalized social groups that have no power to understand and resist information surveillance and those equipped with such power may be magnified (see Nakamura & Chow-White, 2011).

The purpose of this article is to examine the digital divide among different social groups in terms of skill and knowledge to resist unwarranted surveillance. The central task is subject to the digital reproduction hypothesis, that is, whether and to what extent inequalities in offline social status are reproduced as disparities in online status in the two dimensions of personal information skill and knowledge—user behavior and knowledge in guarding against unwarranted Internet-based data surveillance. To identify the population segments that are particularly vulnerable to undue data surveillance is a primary social and policy concern. At a theoretical ground, the motivation of this study is grounded on the concern about social stratification (Dimaggio, Hargittai, Neuman, & Robinson, 2001)—a discrepancy in benefits from new technology across different sociodemographic status groups.

This article links information privacy literature to the enriched debate of digital divide,[1] with a particular emphasis on underserved user segments. In the next section, a brief framework describing key issues in the surveillance literature is presented, followed by research questions and hypotheses. The results will be discussed with a focus on how preexisting social conditions continue to shape the vibrant possibilities of new technologies and their tendencies to reinforce rather than reduce digital inequalities.

Digital Inequalities in Panopticon

For years, scholars have alleged the potential role of the Internet in changing societies. In particular, technological determinists have posited the structural properties of new technology may inherently lead to positive outcomes and progress (e.g., Eisentein, 1993). The premise in this projection is the possibility of social mobility enabled by new technology. This Internet hypothesis in fact has valid grounds to conjecture, as the Internet can lower transaction cost in information seeking, facilitate the distribution of knowledge, and ultimately contribute to alleviate offline social disparities. From the point of view of skeptics, however, the Internet may only exacerbate existing social inequalities, while disproportionately benefiting those already under privileged status (Dimaggio, Hargittai, Celeste, & Shafer, 2004; Hargittai, 2002, 2007; Hargittai & Hinnant, 2008).

Castells (2003) documenting the industrial revolution and the ensuing urbanization noted the resilience of dominant social systems. That is, the fabric of existing power—once secured through economic class, education, and ethnic background—may function in a self-serving cycle, with the possession of a pivotal technical means adding a fundamental source of reproducing social exclusion (Castells, 2003; Dimaggio et al., 2001). Similarly, it is quite possible that the spectrum of societal differences is becoming even deeper in the digital sphere, as those who are privileged remain better positioned. In other words, it is theorized that the pattern of inequity that exists offline is simply replicated online and that the Internet does not function to increase the potential for social mobility.

The digital divide dimension of privacy can be more complex than the simple question of whether social mobility or reproduction of social differences is enhanced; motivational differences (see Ettema & Kline, 1977) such as surveillance fear and concern of information control are also a factor in determining how people respond to undue information surveillance. On one hand, the Internet may provide the very tools to mobilize equal resistance capacity regardless of social status. On the other hand, however, the Internet in its unprecedented panopticon control by which every facet of digital identities can be observed without user awareness may exacerbate the asymmetry between haves and have-nots—those who are socially equipped or unable to translate surveillance fear into appropriate action and knowledge.

Note the confluence from existing social stratification at two levels (see Figure 1). On the first level, socioeconomic status may continue to serve as a primary basis of reproducing inequality in

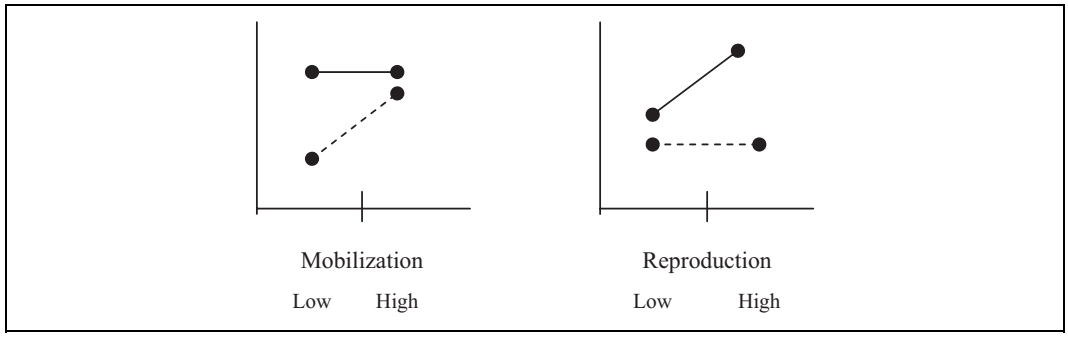

Figure 1. Interplay hypothesis: Internet access factor and sociodemographic status.
Note. ●——● For high sociodemographic status; ● - - - ● for low status, with X = Internet access factors and Y = information ability of skill and knowledge. Mobilization arises as high levels of Internet access factors shrink the gap between low and high statuses, whereas reproduction occurs with the gap even widening at higher levels of access factors.

online status to resist surveillance or control one's information. On the second level, the variations in access to physical means of technology may well entrench another base in which the pattern of difference may be sustained (Dimaggio et al., 2001). Internet use does not happen in isolation from social status and contexts (Hargittai, 2005, 2007; Sandvig, 2011). As the potential of new technology is socially constructed and conditioned, it is important to investigate the extent to which offline socioeconomic positions, in interplay with access contexts, translate to disparities in online status in a particular dimension of the Internet.

Privacy From a Social Stratification Perspective

Systematic assessment of the digital divide of privacy has been scant, as a majority of earlier privacy studies (e.g., Ackerman, Lorrie, & Reagle, 1999) focused on the identification of public trends over time. Westin (1998, 2001), for instance, measured public privacy concerns and found that attitudes were divided into three groups: privacy absolutists, or those with very high surveillance concern; those with little or no concerns; and pragmatists, those in the middle. More recently, a Pew Internet survey (2007; see also Truste, 2008) found growing levels of public anxiety and awareness regarding cloud computing and related marketing surveillance. The survey findings consistently identified the emergence of stratification among users, in terms of varying levels of digital surveillance awareness and concern.

Yet, the earlier studies have not revealed much of the nature of public attitudes toward information-intensive digital spheres. First, the identification of an overall stratification of user attitudes is generally descriptive, but lacks analysis of societal antecedents of these differentiated attitudes, or of the consequences. Second, there has been minimal linkage to theoretical perspectives that could predict future developments in the divided formation of new user public.

Furthermore, prior empirical endeavors to identify user stratification have focused heavily on the online shopping (e-commerce) context. For instance, Phelps, Nowak, and Ferrell (2000) classified user groups according to the types of information that consumers were willing to trade, and found that financial identifiers were least willing, purchase-related data were less willing and demographic–lifestyle information was most willing. Campbell (1997), with the concern about direct marketing, identified the divergence in attitude toward data release between consumers and managers, with the study's main finding also indicating different attitudinal formations corresponding marketers' data collection, secondary access, and errors in use of personal data. Surely, effective understanding of consumers is essential in establishing a business–consumer relationship as

marketers and the advertising sector have a desire to understand the public's trust and willingness to release personal data. The analytical motivation in this regard has been to classify the typology of consumers with regard to their acceptance of releasing personal data. Inadvertently, the somewhat contradictory nature of public attitudes, marked by a high concern for privacy but also a willingness to trade privacy for convenience, is highlighted as characteristic of a dominant online user type (e.g., Craincross, 2000; Park, Campbell, & Kwak, 2012).

In this line of research, some experimental studies called for investigating underlying psychological factors. A few recent studies (e.g., Kelly, Cesca, Bresee, & Cranor, 2011) also examined behavioral responses to different privacy policy formats and found that the standardized format of privacy policy increased users' reading experiences and understandings. Brandimarte, Acquisti, and Loewenstein (2012) also investigated users' paradoxical psychology. Their approach was rooted in behavioral economics and the main finding indicated that the increase in perceived control over the release of information actually increased willingness to release sensitive information—the unintended consequence of creating more user control over privacy. Granted the presence of a social–psychological process underlying paradoxical behavioral patterns, however, the obvious drawback is the constraint of hypothesis testing in a single mechanism of stimulus-induced behaviors, which excludes externally valid measures to observe the social stratum under which disadvantaged groups are resituated in new mediums.[2] In addition, the somewhat clinical emphasis on user attributes, rather than on systematic societal patterns, tended to assume that the locus of the problem largely resides in individuals.

Recently, serious scholarly attention focused on personalized data control in social networking sites, such as Facebook (e.g., Boyd & Hargittai, 2010; Debatin, Lovejoy, Horn, & Hughes, 2009; cf. Park, 2013). For instance, Lewis, Kaufman, and Christakis (2008) documented the behavioral patterns of publicly displaying personal profiles among college students. Boyd and Hargittai (2010) also reported a substantial number of young Facebook users were aware of and concerned about potential privacy threats, contrary to the wide misconception that young people do not care about privacy. Although such advanced research in the field has moved significant steps forward, few studies address the fundamental social determinants of variations in users' abilities to control online information. This gap warrants a systematic inquiry to explicate a predictive model of Internet-based personal information skill and knowledge.

In sum, the reproduction of digital inequalities has been seldom explored and even more rarely tested in an empirical fashion from a surveillance perspective. There is a lack of advanced studies exploring the root of the digital divide beyond relatively basic studies on the binary possession of having or not having Internet connectivity. This empirical disinterest in the societal distribution pattern of the fundamental tools for information control, power, and resistance is disheartening (Marx, 2003). Rather, it is essential to understand whether the Internet amplifies the position of those in power, while continuously frustrating those with no socioeconomic power, with regard to ability to respond effectively to new digital environments for storing, processing, and exchanging information (Dimaggio et al., 2001; see Sandvig, 2011).

In this line, Fisher (1994) also noted that, in shaping the affordance of new technology, the battle to obtain and apply emerging technologies has always been affected by factors of class, age, gender, and race/ethnicity as embedded in the social strata of society. To assess the Internet's impact on privacy issues accurately requires moving beyond the prior emphasis on individual-level behavioral contradictions to investigate:

1. the conditions that incubate systematic differences in abilities to control or resist information surveillance;
2. the predictive power of offline sociodemographic status; and
3. the enabling role of the medium itself, that is, the positive or negative influence of Internet use and access on user power (van Dijk, 2005).

The Present Study

To accomplish these goals, this study takes steps to build upon existing advanced studies and expand understanding of the status of the disadvantaged in the personal information privacy realm, while advancing broader societal concern as well (Agre, 1998; Dimaggio et al, 2001; Gandy, 2009; Hargittai, 2007; Hoofnagle, King, Li, & Turow, 2010; Marx, 2003; Park, 2008, 2011a; Turow, 2003). To be more explicit, this study situates the privacy–surveillance literature in the context of social stratification, while making the connection into digital divide debate with the particular concern about the reproducing power of the social determinants. In understanding variations in users' abilities to control online information, systematic investigation into social determinants in interplay with Internet access remains a primary goal.

A national probability sample provides a unique opportunity for empirical examination of the advancement of skill and knowledge measures in the U.S. context. The investigation begins with respective influences from Internet access factors, offline sociodemographic status, and their interactive effects, founded upon the digital reproduction hypothesis, that is, the potential role of offline status in moderating the mobilizing or reinforcing power of the Internet. It will note the critical distinction in possession of resources with regard to (1) Internet access and use, (2) sociodemographic status, and (3) the interplay between the two. Analytically, a series of logistic regression models is advanced to weigh the determining factors of disparities in online status quantitatively and thus move beyond descriptive observations.

Hypotheses and Research Questions

Statistical analysis in this study follows two research premises. The first premise is that the patterns of offline disparity will be reproduced in online status, as indicated by information skill and knowledge. Here we have the concrete findings from prior research that suggest gender (Boyd & Hargittai, 2010), age (Hoofnagle et al., 2010), income (Hargittai, 2002), education (Turow, 2003), and race (Gandy, 2009) may be the significant predictors. That is, being less educated, less wealthy, being older, being female, and belonging to marginalized ethnic groups will be associated with less Internet-related personal information skill and knowledge. In assessing the possession of resources with regard to Internet access and use, it was found that higher levels of various Internet access factors, such as the frequency of daily use, years of Internet experience, and the number of access location, were significantly associated with higher levels of skill and knowledge in other domains such as diverse skill sets and content creation (Hargittai, 2005, 2007). From this, we can posit that levels of Internet access factors will be positively associated with levels of Internet-related personal information skill and knowledge.

The presence of the interaction between sociodemographics and Internet access factor is reasonable to suspect, as evidence from prior research (Park, 2013; Park et al., 2012) indicates the moderating effect of Internet use and access across different sociodemographic status groups. This is to detect more nuanced function of the key predictors, as appropriated in interaction terms. For instance, it is highly conceivable that the associations for various Internet access factors will vary across older and younger users, users with lower and higher income levels, as well as across females and males. Still, at least in the domain of privacy literature, there is not enough evidence to suggest that sociodemographic status will significantly interact with levels of Internet access factors to exacerbate or alleviate problems associated with poor Internet access. Henceforth, instead of specifying directionalities of interaction terms, we pose a research question. The hypotheses, subhypotheses, and a research question used in the first premise follow.

Hypotheses Regarding Digital Reproduction: Premise 1

Hypothesis 1: Daily online use, years of Internet experience, and the number of access location will be positively associated with levels of personal information skill and knowledge.

Hypothesis 2: Offline sociodemographic disparities will be replicated in online disparities of personal information skill and knowledge:
Hypothesis 2a: A lower level of education will be associated with lower levels of personal information knowledge and skill.
Hypothesis 2b: A lower level of income will be associated with lower levels of personal information knowledge and skill.
Hypothesis 2c: Being older will be associated with lower levels of personal information knowledge and skill.
Hypothesis 2d: Belonging to marginalized social groups will be associated with lower levels of personal information knowledge and skill.
Hypothesis 2e: Being female will be associated with lower levels of personal information knowledge and skill.
Research Question 1: To what extent does sociodemographic status interact with the Internet access factors with regard to personal information knowledge and skill?

The second premise introduces the motivational factor to examine whether the presence or absence of surveillance concern over perceived information control moderates or exacerbates the reproductive patterns of digital inequalities. In these tests, other key demographic variables and Internet access factors are controlled for. Prior research lends little grounds specifying a hypothetical directionality. At best, scholars (Acquisti & Grosslags, 2005) have found a weak relationship between concern and personal information skill, while others (Chen & Rea, 2004) have found a negative relationship between the two, suggesting that marginalized users may be unable to translate surveillance concern of information into appropriate action and knowledge. Note that this is a construct of a subjective motivation (see Ettema & Kline, 1977) in determining how people respond to data information surveillance. Here the analytical focus is on whether (1) socially vulnerable user segments and (2) users with limited Internet access factor are still lagging behind in the digital information domain in spite of high surveillance concern as indicated by perceived information control.

Research Question Regarding Individual Motivation: Premise 2

Research Question 2: To what extent does the surveillance concern of perceived information control interact with (a) sociodemographic status and (b) the Internet access factors?

Method

Sampling and Procedure

The analysis is based on a national probability sample of 419 adult Internet users (age 18 and over). The Knowledge Networks (KNs) recruited the respondents, using random digit dialing. The participants were asked to complete an online survey, which took about 10–12 min to complete. In order to improve the response rate, an e-mail reminder was sent to nonrespondents 3 days after the initial contact. The demographic characteristics of the KN panel are not much different from those of the general population as reported in the U.S. Census Bureau's American Community Survey. For a study on Internet use, however, a nationally representative sample of U.S. Internet users would be a more appropriate baseline.

Table 1 presents descriptive statistics about the sociodemographic characteristics of this study's respondents in comparison to a Federal Communications Commission (FCC; 2010) wired and wireless Internet survey sample. The KN sample's characteristics were closely aligned with the profile of Internet users in the FCC sample. However, age and income levels were slightly higher in this study's sample than in the FCC sample. Non-Hispanic White users make up 77% of the sample,

Table 1. Internet Access Factor and Sociodemographic Status.

	KN Sample 2008 ($N = 419$)		FCC Broadband 2010 ($N = 3{,}005$)			
			Internet User		Total	
	M	*SD*	*M*	*SD*	*M*	*SD*
Internet access factor						
Years of Internet experience	11.06	4.41				
Daily use (minutes)	297.51	303.54				
Number of access location	2.32	1.31				
Sociodemographic status						
Education	2.97	0.93	2.96	0.93	2.63	1.02
Age	46.34	16.24	42.52	15.83	46.69	17.99
Income	6.07	1.86	5.48	2.26	4.84	2.44
Race (high: White; %)	77		76		70	
Gender (high: female; %)	53.6		50.2		51.7	

Note. KN = Knowledge Network; FCC = Federal Communications Commission.
For gender, *male* was coded as 1, with *female* as 2. Education in both surveys was measured in four categories. Income in the KN panel was recoded into nine categories to be equivalent to Federal Communications Commission (2010, May) wired and wireless Internet survey.

close to the figure in the FCC broadband Internet user sample (76%); however, this number is higher than that in the 2010 U.S. Census report (72.4%). In this regard, caution is necessary to the extent readers can generalize this study's findings. In addition, it is a limitation that this survey was administrated via online questionnaire, given the variables of interest associated with online disclosure behavior. The original sample size was 456, with a response rate of 69% (456 completed of the 663 contacted); the item validity check reduced the final data set to 419 responses.

Measures

Criterion Variables. Criterion variables were observed in two dimensions: (1) personal information skill and (2) personal information knowledge in the Internet. Personal information skills were operationalized as user behavior in guarding against unwarranted surveillance (Marx, 2003), on a 6-point scale ranging from *never* to *very often*. Three questions asked the extent to which individual users are involved in strategizing information release: masquerade, multiple accounts, and rectify. The other three questions examined whether respondents apply methods of using the browser to protect personal information: delete cookies, clear history, and adjust security level (Acquisti & Grosslags, 2005; Park, 2008; Pew Internet, 2007).

Personal information knowledge was indicated through answers to factual questions adopted from those used by Turow (2003; see also Hoofnagle et al., 2010; Turow, Feldman, & Meltzer, 2005). The true–false items examined two dimensions of user knowledge: (1) policy understanding and (2) data surveillance awareness. In each dimension, three questions investigated user awareness related to data appropriation, collection, and transfer. We used discrete measures in order to detect nuanced and potentially complex patterns of user knowledge and skill that may be present across different dimensions (see Marcus, MacKuen, & Neuman, 2011).[3] Table 2 describes all the criterion variables.

Exogenous Variables

Internet Access Factors and Sociodemographics. The existing social divide was measured on the basis of both Internet access and demographic factors. First, three questions were asked concerning the

Table 2. Internet-Related Personal Information Skill and Knowledge.

Items	Survey Measures	*M*	*SD*
Skill items: strategizing information release			
Masquerading	Given false or inaccurate e-mail address or fake names to websites because of the privacy concern	2.54	1.73
Multiple accounts	Used an e-mail address that is not your main address, in order to avoid giving a website real information about yourself	2.89	1.97
Rectifying	Asked a website to remove your name and address from any lists used for marketing purpose	3.51	1.82
Skill items: use of browser			
Clearing history	Cleared your web browser history	3.49	1.81
Erasing cookies	Erased some or all of the cookies on your computer	3.68	1.90
Adjusting security	Adjusted the security level of your browser for different sites	2.92	1.78
		Total skill items $\alpha = .70$	
Knowledge items: policy understanding			
Transfer	When I give personal information to an online banking site such as citibank.com, privacy laws say the site has no right to share that information, even with companies it owns	0.22	0.41
Collection	U.S. government agencies can collect information about you online without your knowledge and consent	0.56	0.49
Appropriation	It is legal for an online store to charge different people different prices at the same time of the day	0.22	0.41
Knowledge items: surveillance awareness			
Transfer	When a website has a privacy policy, it means the site will not share your information with other websites or companies	0.25	0.43
Collection	When you go to a website, it can collect information about you even if you don't register	0.65	0.47
Appropriation	Companies today have the ability to place an online advertisement that targets you based on information collected on your web browsing behavior	0.75	0.43
		Total Knowledge Items $\alpha = .66$	

possession of Internet access factor: (1) the frequency of daily online use as measured in minutes, (2) years of Internet experience, that is, how many years a user had been using Internet (Hargittai, 2004, 2005, 2009; Kim & Ball-Rokeach, 2006), and (3) the number of online access location, as the freedom to use the Internet anywhere has been identified as one of the most significant predictors in determining user skills (Hargittai, 2004).

Sociodemographic factors were identified in terms of five indicators of social stratification: (1) education, (2) income, (3) age, (4) gender, and (5) race/ethnicity. Education was measured according to four categories: high school, some college, college completion, and additional graduate-level study. Household income ranged from less than $5,000 to more than $175,000 and was later recoded into nine categories. Age and gender were imputed from the KN panel profile. For race/ethnicity, a dichotomous variable was created as White and non-White, with African American, Asian, Native American, and Latino users being recoded into one category. This provides the

parsimonious measure that is particularly useful in specifying interaction patterns. Furthermore, the binary item helps achieve statistical power when the sizes (n) of subgroups are too small to detect significance in multiple group analysis (e.g., Park et al., 2012, for privacy; Napoli & Yan, 2007, for a demographic characteristic of a market).

Surveillance Concern of Perceived Information Control. Surveillance concern was operationalized to the individual user's perceived information control, which was measured in two dimensions: (1) extrinsic and (2) intrinsic locus of control. The 2 items used, one for each locus of control, were modified from prior studies (Westin, 1998, 2001). Respondents were asked to assess the following statements, anchored on a 6-point scale from *strongly disagree* to *strongly agree*: (1) "Consumers have lost all control over how personal information about them is circulated and used by companies" ($M = 4.07$, $SD = 1.36$) and (2) "I feel my efforts to control my personal data are undermined by the power of surveillance technologies" ($M = 3.99$, $SD = 1.31$). An additive index was created for the 2 items for the locus of perceived information control (LIC; Cronbach's $\alpha = .67$). The items of locus of control were reversed prior to the index creation, so that a positive score indicates a high level of perceived information control.

Analytical Strategies

With regard to the first research premise, the analytical models were built upon a series of the main explanatory factors in a hierarchical order[4]: (1) Internet access factor (Hypothesis 1), (2) sociodemographic factor (Hypothesis 2), and (3) the interplay between sociodemographics and Internet access factor (Research Question 1). The second premise focuses on an individual motivational factor, that is, the LIC, and its interplay with the two main explanatory factors of Internet access and sociodemographics (Research Question 2). Hierarchical logistic regression is advantageous when the explanatory powers of different contextual factors are accounted for as binary variables in discrete dimensions (Dayton, 1992). The exact outcomes of interest in the models are the presence or absence of the equipment of personal information skill and knowledge. For personal information skill items, binary variables were created by assigning 0 to *never*, *very rarely*, or *rarely* and 1 to *sometimes, often,* or *very often* in order to capture a likelihood of user involvement in each activity (cf. Hargittai & Hsieh, 2010). For personal information knowledge items, dichotomous variables were created, with 1 assigned for the *correct answers* and 0 for *all other answers*.

To carry out the analyses, this study constructed a total of 15 two-way interaction terms. The variables were standardized prior to the formation of interaction terms so as to reduce potential problems with multicollinearity (Campbell & Kwak, 2010). Each factor of the explanatory variables in the first premise was entered in the order of (1) Internet access factors, (2) sociodemographics, and (3) the interaction terms, in hierarchical logistic analyses. Likewise, for the second premise, which included the individual motivational information concern factor, separate analyses were conducted for the interactions, after controlling all prior blocks and their two-way interactions.

Results

Tables 3 and 4 show the findings concerning Hypotheses 1 and 2, each of which tests the role of (1) Internet access factors and (2) sociodemographics in reproducing the divide in unitary measures of personal information knowledge and skill. As shown in Table 3, years of Internet experience and the number of access location were consistent predictors for personal information skills, lending the support to Hypothesis 1. Daily Internet use was significant in predicting two skill measures, but the impact was not consistent. Age was the most significant demographic factor in affecting skill levels, as the likelihood of being engaged in each of the six information skill items was consistently low among older users (Hypothesis 2c). Gender differences were also significant, particularly with

Table 3. Logistic Regression Analyses: Internet-Related Personal Information Skill.

	Strategizing Information Release						Use of Browser					
	Masquerading		Multiple Accounts		Rectifying		Cookies		Clear Histories		Adjust Security	
Internet access factor												
Years of experience	1.454** (0.11)	.001	1.384** (0.10)	.002	1.405** (0.11)	.003	1.427** (0.11)	.002	1.545** (0.11)	.000	1.455** (0.10)	.001
Daily use (logged)	1.144 (0.10)	.206	1.124 (0.10)	.266	1.378** (0.12)	.008	1.246 (0.12)*	.069	1.420** (0.12)	.005	0.995 (0.10)	.960
Number of access location	1.448** (0.11)	.001	1.463** (0.11)	.001	1.267** (0.12)	.049	1.500** (0.12)	.002	1.267** (0.11)	.043	1.423** (0.11)	.002
Sociodemographic status												
Education	1.017 (0.13)	.898	1.006 (0.12)	.961	1.075 (0.12)	.561	0.994 (0.12)	.963	1.056 (0.12)	.655	0.827 (0.12)	.129
Income	0.837 (0.11)	.129	0.957 (0.11)	.696	0.852 (0.11)	.173	0.836 (0.11)	.132	0.921 (0.11)	.480	0.862 (0.11)	.191
Age	0.597** (0.12)	.000	0.572** (0.12)	.000	0.591** (0.11)	.000	0.741** (0.11)	.010	0.731** (0.11)	.007	0.722** (0.11)	.006
Race (White = high)	1.417** (0.12)	.005	1.140 (0.11)	.250	1.101 (0.11)	.406	1.063 (0.11)	.602	1.055 (0.11)	.639	1.066 (0.11)	.577
Gender (female = high)	0.848 (0.11)	.152	0.774** (0.11)	.020	1.063 (0.11)	.584	0.782** (0.11)	.030	0.671** (0.11)	.000	0.899 (0.11)	.340

Note. Entries are odds ratios and *p* values; standard errors are in parentheses. The odds larger than 1 indicate the likelihood of the involvement in each activity, while the odds smaller than 1 favor the likelihood of inaction.
**$p = .05$.*$p = .10$.

Table 4. Logistic Regression Analyses: Internet-Related Personal Information Knowledge.

	Policy Understanding						Surveillance Awareness					
	Collection		Transfer		Appropriation		Collection		Transfer		Appropriation	
Internet access												
Years of experience	1.294** (0.10)	.015	1.330** (0.12)	.020	1.264** (0.12)	.057	1.557** (0.11)	.000	1.553** (0.11)	.000	1.507** (0.13)	.002
Daily use (logged)	1.043 (0.10)	.688	0.803 (0.14)	.119	0.933 (0.12)	.586	0.945 (0.11)	.614	0.844 (0.12)	.181	1.149 (0.13)	.293
Number of access location	1.137 (0.11)	.241	1.422** (0.12)	.005	1.723** (0.12)	.000	1.386** (0.12)	.008	1.450** (0.12)	.000	1.120 (0.13)	.382
Sociodemographic status												
Education	0.888 (0.11)	.305	1.237 (0.15)	.163	0.910 (0.15)	.533	0.898 (0.12)	.375	1.307** (0.14)	.057	1.063 (0.13)	.639
Income	0.965 (0.10)	.737	1.085 (0.13)	.545	1.482** (0.14)	.008	1.134 (0.11)	.267	1.070 (0.12)	.586	1.000 (0.12)	.997
Age	1.042 (0.10)	.704	1.237 (0.14)	.128	0.697** (0.14)	.012	0.811 (0.11)*	.069	0.742** (0.13)	.027	1.123 (0.12)	.352
Race (White = high)	0.848 (0.11)	.133	1.311 (0.15)*	.086	0.986 (0.13)	.916	1.087 (0.11)	.465	1.339** (0.14)	.037	1.038 (0.12)	.763
Gender (female = high)	0.912 (0.10)	.378	0.714** (0.13)	.010	0.621** (0.13)	.000	0.776** (0.11)	.024	0.833 (0.12)	.134	0.780** (0.12)	.046

Note. Entries are odd ratios and *p* values; standard errors are in parentheses. The odds larger than 1 indicate the likelihood of the correct response.
**$p = .05$. *$p = .10$.

regard to use of the browser (Hypothesis 2e). With regard to race, non-White users were found less likely to engage in masquerading (Hypothesis 2d). However, there is no support for Hypotheses 2a and 2b, as income and education disparities had no influence on any of the skill measures.

Table 4 shows similar patterns of disparity replications in personal information knowledge. In support of Hypothesis 1, the likelihood of correctly understanding policy and surveillance practices differs significantly according to one's levels of years of Internet experience and the number of access location. With regard to sociodemographic factors, gender disparities persist in support of Hypothesis 2e, as male users were significantly more likely to give correct answers. Age was not as consistent as in predicting skills; however, younger users were more likely to score correctly at least in three knowledge items, partially supporting Hypothesis 2c. Higher levels of income and education were significant in policy understanding of data appropriation and transfer. However, the supports of Hypotheses 2a and 2b were not consistent: as with skills, these two status indicators functioned as relatively weak predictors in knowledge items.

While Tables 3 and 4 show the direct effects on the reproduction of online disparities, Table 5 presents more nuanced insights, that is, the interplay between Internet access factor and sociodemographic status in reinforcing or mobilizing the existing divides (Research Question 1). After the prior blocks, the significant interactions among various indicators of Internet access and sociodemographic factors show the complex patterns of interplay. On one hand, there is a clear pattern of reinforcement of disparities with all sociodemographic status indicators. On the other hand, there is also a pattern of mobilizing opportunities—the trend manifested in demographic characteristics such as gender and race.

In order to display the significant interactive relationships, the coefficient values were plotted in each panel of Figures 2 and 3, which present significant interaction terms in knowledge and skill, respectively.[5] Figure 2 shows the evident patterns of reinforcement, as the positive impacts of (1) years of Internet experience and (2) the number of access location tended to become even stronger among younger users, those with high income, and the more highly educated. Also noteworthy is the opposite pattern of mobilization, in which non-Whites, females, and older users benefited from the increased number of Internet access location. Figure 3 displays similar patterns. Yet, when it comes to information knowledge, it is more apparent that the significant interactions were stronger among those in the privileged positions. In particular, benefits from the Internet were found to be nonexistent among older users. For the users who were male and of White ethnicity, the likelihood of giving correct answers also increased significantly with the increased number of access location. Moreover, higher levels of income and education, again as in the case of skills, increased the probability of correct understanding, particularly among those with high levels of (1) Internet access location and (2) years of Internet experience.

The second premise introduced the LIC (Research Question 2), so as to examine the potential relationship between individual motivation factor of surveillance concern and sociodemographic and Internet access divides. Table 6 shows the results of interaction terms in hierarchical logistic analyses.[6] With respect to sociodemographic status, significant interactions were found with gender, age, and education. Income was also marginally significant in its interactions. Here surveillance concern of perceived information control exacerbated existing disparities, particularly of age and gender. Among those with a low level of perceived information control (i.e., a high-concern group), older users were less likely to be engaged in some of the data activities. Moreover, at least in 2 items, female users were less likely to be (1) policy aware and (2) engaged, with a decreased level of perceived information control. Only a limited support was found for the role of the Internet access factor, as it did not interact with the LIC in most items.

Discussion

Systematic investigation into social determinants, and their interplay with access to Internet, has been little explored in the privacy realm. Importing insights from advanced digital divide literature

Table 5. Interaction in Accounting for Internet-Related Personal Information Skill and Knowledge.

	X Years of Online Experience					X Daily Online Use					X Number of Access Location				
	A	R	G	I	E	A	R	G	I	E	A	R	G	I	E
Rectifying	0.823 (0.13)	0.909 (0.12)	0.979 (0.12)	0.831 (0.13)	1.010 (0.13)	0.856 (0.17)	1.177 (0.13)	0.929 (0.13)	1.235 (0.14)	0.626** (0.15)	1.344** (0.13)	1.027 (0.13)	1.322** (0.13)	1.152 (0.13)	1.182 (0.16)
Masquerade	0.984 (0.13)	0.905 (0.12)	0.922 (0.12)	1.017 (0.12)	1.097 (0.13)	0.952 (0.14)	0.961 (0.12)	0.786 (0.1)*	0.908 (0.14)	0.884 (0.14)	0.997 (0.13)	0.927 (0.13)	1.089 (0.12)	1.139 (0.12)	1.161 (0.15)
Multiple	0.680** (0.14)	1.043 (0.13)	1.041 (0.12)	0.928 (0.12)	1.248 (0.13)	1.348** (0.14)	0.821 (0.12)	0.814 (0.14)	0.765 (0.1)*	0.892 (0.14)	0.937 (0.13)	0.754 (0.1)*	1.019 (0.13)	1.001 (0.13)	1.353 (0.1)*
Cookies	0.852 (0.13)	0.873 (0.13)	1.203 (0.12)	0.940 (0.13)	1.227 (0.13)	1.040 (0.14)	0.775 (0.16)	1.035 (0.14)	0.925 (0.16)	1.226 (0.16)	1.190 (0.12)	0.713** (0.15)	1.109 (0.13)	0.944 (0.14)	1.126 (0.15)
Histories	0.672** (0.15)	1.010 (0.14)	1.243 (0.13)	0.760 (0.1)*	1.326 (0.1)*	1.018 (0.16)	0.821 (0.26)	0.716 (0.1)*	1.420** (0.16)	0.857 (0.17)	1.525** (0.13)	0.502** (0.17)	0.883 (0.14)	0.970 (0.14)	1.344 (0.1)*
Security	0.888 (0.13)	0.827 (0.12)	1.146 (0.12)	1.150 (0.11)	0.897 (0.13)	1.125 (0.14)	0.911 (0.12)	0.970 (0.12)	1.150 (0.14)	1.158 (0.14)	1.204 (0.12)	1.072 (0.13)	1.190 (0.12)	0.992 (0.12)	1.277 (0.15)
Transfer: P	0.860 (0.16)	1.450** (0.18)	1.356** (0.14)	0.878 (0.14)	1.199 (0.16)	1.031 (0.22)	0.773 (0.18)	0.804 (0.16)	1.313 (0.20)	1.367 (0.22)	1.203 (0.15)	0.825 (0.17)	1.113 (0.15)	0.895 (0.14)	0.744 (0.1)*
Collection: P	0.897 (0.12)	1.208 (0.11)	1.261 (0.1)*	0.878 (0.11)	1.059 (0.12)	1.264 (0.15)	0.573** (0.15)	0.878 (().13)	0.776 (0.1)*	1.225 (0.15)	0.808 (0.13)	1.239 (0.13)	0.683** (0.13)	0.947 (0.13)	0.980 (0.14)
Appropriation: P	1.186 (0.15)	1.036 (0.15)	0.860 (0.15)	1.154 (0.16)	0.890 (0.15)	0.603** (0.22)	0.791 (0.16)	0.882 (0.19)	0.851 (0.18)	0.931 (0.18)	0.745 (0.18)	0.897 (0.15)	1.040 (0.15)	1.321 (0.17)	0.929 (0.18)
Transfer: S	1.037 (0.15)	1.425** (0.15)	1.262 (0.1)*	0.921 (0.13)	1.302 (0.1)*	1.112 (0.16)	0.748** (0.14)	0.949 (0.14)	0.977 (0.15)	1.020 (0.15)	1.064 (0.14)	1.085 (0.16)	1.141 (0.13)	1.058 (0.13)	0.991 (0.17)
Collection: S	0.846 (0.14)	0.936 (0.12)	0.807 (0.13)	1.292** (0.12)	0.967 (0.14)	0.930 (0.17)	0.712** (0.15)	0.624 (0.17)	0.988 (0.15)	0.974 (0.15)	0.777 (0.1)*	1.001 (0.15)	0.926 (0.15)	0.865 (0.14)	1.778** (0.17)
Appropriation: S	0.846 (0.15)	0.760 (0.17)	1.389** (0.14)	0.806 (0.14)	1.404** (0.16)	1.071 (0.15)	0.779 (0.16)	0.844 (0.20)	1.259 (0.18)	1.379 (0.18)*	1.018 (0.15)	1.152 (0.16)	0.723 (0.16)*	1.037 (0.15)	1.278 (0.17)

Note. A = age; R = race; G = gender; I = income; E = education; P = policy knowledge; S = surveillance awareness.
Entries are odd ratios; standard errors are in parentheses. Prior blocks include all the main variables of Internet access factors and sociodemographics.
**$p = .05$. *$p = .10$.

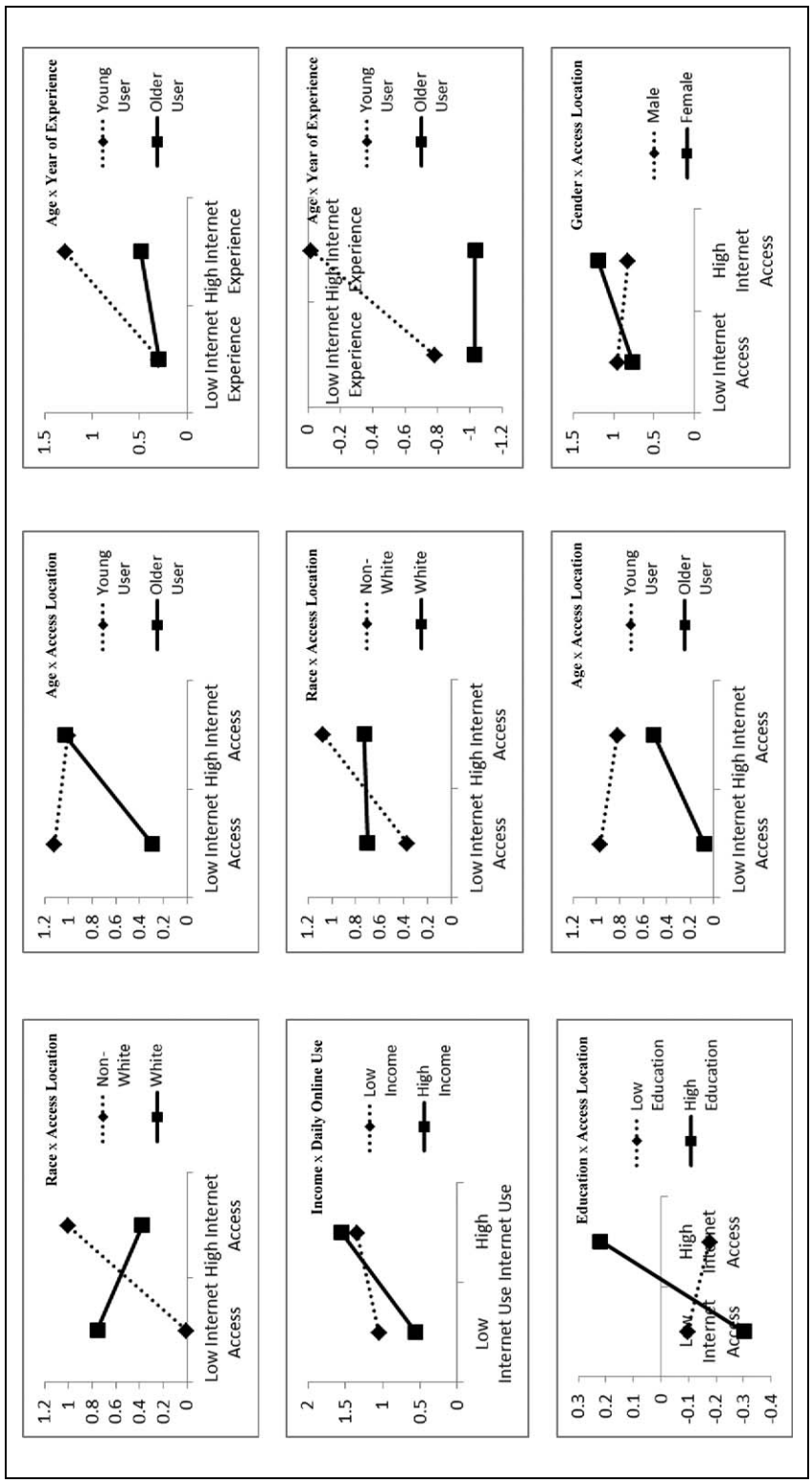

Figure 2. Interaction in accounting for skill items.

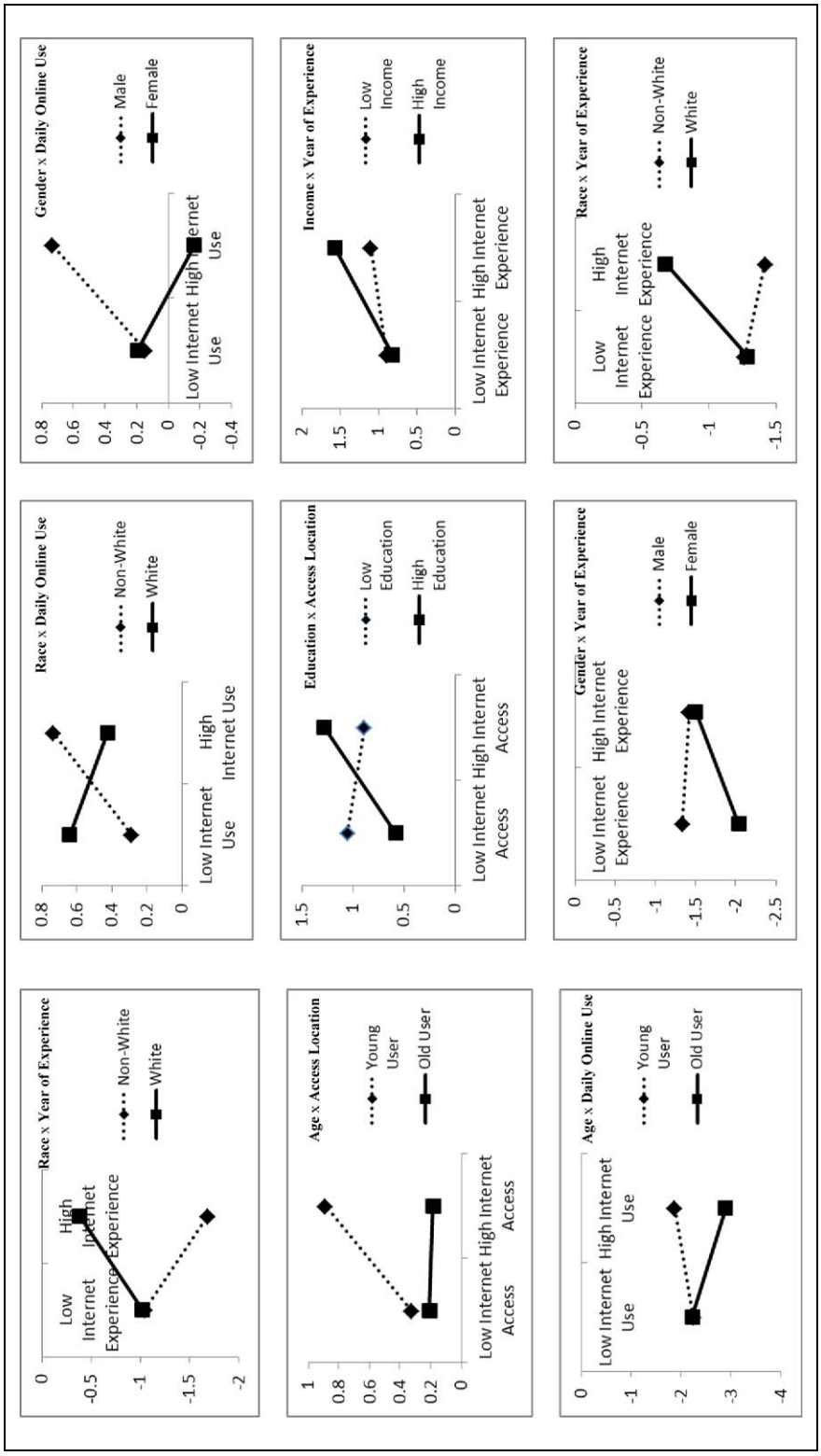

Figure 3. Interaction in accounting for knowledge items.

Table 6. Interaction: Surveillance Concern of Perceived Information Control.

	X Perceived Information Control			X Perceived Information Control				
	Experience	Daily Use	Access	Age	Race	Gender	Income	Education
Rectifying	1.041 (0.15)	1.130 (0.17)	0.992 (0.14)	1.795** (0.15)	0.990 (0.12)	1.137 (0.13)	0.770 (0.14)*	1.307 (0.15)*
Masquerade	1.197 (0.15)	0.944 (0.17)	0.951 (0.14)	1.086 (0.15)	1.092 (0.14)	1.260 (0.13)	1.034 (0.13)	0.718** (0.15)
Multiple	0.970 (0.14)	1.08 (0.16)	0.798 (0.14)	1.217 (0.14)	1.121 (0.13)	0.974 (0.13)	0.768 (0.14)*	0.991 (0.14)
Cookies	1.021 (0.15)	1.247 (0.19)	1.149 (0.14)	0.962 (0.13)	1.157 (0.13)	1.151 (0.12)	1.181 (0.13)	0.826 (0.14)
Histories	0.842 (0.16)	1.031 (0.22)	1.183 (0.16)	1.062 (0.14)	0.839 (0.14)	1.185 (0.13)	0.974 (0.14)	0.944 (0.15)
Security	0.936 (0.15)	1.057 (0.16)	0.808 (0.15)	0.780 (0.14)	1.130 (0.13)	1.472** (0.13)	0.923 (0.13)	0.879 (0.15)
Transfer: P	1.213 (0.18)	0.853 (0.21)	1.348 (0.15)*	1.348 (0.17)*	1.175 (0.19)	0.950 (0.15)	1.114 (0.16)	1.005 (0.18)
Collection: P	1.017 (0.14)	1.006 (0.18)	1.365** (0.14)	1.163 (0.13)	1.033 (0.12)	0.942 (0.12)	0.898 (0.13)	1.125 (0.13)
Appropriation: P	1.080 (0.17)	1.202 (0.19)	0.948 (0.17)	0.763 (0.18)	0.917 (0.16)	1.870** (0.17)	0.971 (0.16)	1.070 (0.18)
Transfer: S	0.868 (0.17)	0.879 (0.18)	1.217 (0.14)	1.224 (0.16)	0.958 (0.16)	0.973 (0.15)	0.935 (0.15)	1.704 (0.17)
Collection: S	0.727 (0.16)*	1.210 (0.19)	1.210 (0.14)	1.186 (0.13)	1.069 (0.12)	1.096 (0.13)	0.909 (0.13)	1.130 (0.15)
Appropriation: S	1.207 (0.16)	0.849 (0.22)	1.175 (0.16)	1.381** (0.14)	1.120 (0.13)	0.975 (0.14)	0.753 (0.14)*	1.026 (0.15)

Note. P = policy knowledge; S = surveillance awareness.
Entries are odd ratios; standard errors are in parentheses. Prior blocks include all the variables of Internet access factors, sociodemographics, and locus of perceived information control.
**$p = .05$. *$p = .10$.

(e.g., Dimaggio et al., 2001; Hargittai, 2002, 2007; Hargittai & Hinnant, 2008; Neuman, Bimber, & Hindman, 2011; Sandvig, 2006, 2011), this study tested the reproduction hypothesis, and its *reinforcing* or *mobilizing* tendencies, in the context of Internet-based personal information knowledge and skill. The study provides insight as to how social stratification is being replicated in a specific domain of the Internet. Logistic regressions capture such trends of reproduction through the use of unitary measurements across different privacy dimensions.

The patterns of disparity reproduction are evident. Overall, the predicted reproductive power of sociodemographic status was present, and particularly pronounced with age and gender disparities. While the unequal access to the Internet had the most consistent and significant influence on user skill and knowledge (Hargittai, 2002, 2004), ability to reap the benefits from online were clearly varied among population segments. Results on some measures, notably policy knowledge, were immune to variance in sociodemographic status. Yet, this attests extremely low variations of user skill and knowledge in such measures. In this regard, the role of income and education as weak predictors is noteworthy, for it may indicate that the realities of information environments are quite distant from users' common sense understandings and practices (see Turow, 2003; Turow et al., 2005). In sum, the expected pattern of sociodemographic status in reproducing the personal information knowledge and skill gap is present, along with the manifest impacts of years of Internet experience and the number of Internet access location.

The significant findings regarding the interplay point to the fact that the benefits of Internet are contingent upon sociodemographic conditions. That is, the respective divide at each level of sociodemographic and online statuses magnifies the existing gaps in combination. Notably, the disparities between White and non-White users widen even further at higher levels of Internet access factors such as (1) years of Internet experience and (2) the number of access, possibly accelerating the reproduction of information inequities based on ethnic or racial backgrounds (Hargittai, 2007; Nakamura & Chow-White, 2011; cf. Sandvig, 2011). Likewise, the results indicate that age and gender disparities increase, rather than decrease, with higher levels of Internet access factors. The reason why this pattern should be more evident with personal information knowledge is not immediately clear. Still, it appears the access to the Internet may grant greater benefits to those who are already privileged, while marginalized group members constrained in social surroundings may not be as equipped as high-status individuals to translate their experiences into a set of knowledge. This finding that the power of Internet tends to favor those in better offline positions confirms the entrenchment of digital inequities even in the information privacy realm.

In this regard, the copresence of *reinforcement* and *mobility* in personal information skill items is a particularly interesting and nuanced finding. However, this finding must be interpreted carefully, as the mobilization pattern indicates the presence of apparent status disparities in low Internet access conditions. That is, the likelihood of older, female, and non-White users having personal information skills remains consistently the lowest with low numbers of Internet access location. In other words, the skill gaps in gender (Boyd & Hargittai, 2010), age (Hoofnagle et al., 2010), and race (Danna & Gandy, 2002; Gandy, 2009) become magnified at lower levels of Internet access location, displaying particular vulnerability among marginalized user groups with no access. This is a complex premise in which high offline sociodemographic status is still complementing low online access, on one hand, as those who are in better social positions tend to be better off even with relatively a low number of Internet access location. Henceforth, while acknowledging the complex pattern in which the potential of mobility can be present, we interpret this is likely to arise in limited contexts coupled with the main associations of (1) Internet access factors and (2) sociodemographics.

This study also examined individual motivational factor of perceived information control as another potential determinant of digital disparities (see Dimaggio et al., 2001). Although this study does not take into account complex psychological causalities with the limited number of measures, an argument can be made with regard to the interaction between social status and surveillance

concern of perceived information control in exacerbating the disparities among marginalized segments of the user population. This is inferred because a lack of perceived information control (i.e., a high concern) among females and particularly among older users does not seem to translate into skills or a set of understandings regarding unwarranted surveillance. Furthermore, the surveillance concern of perceived information control tend to not shrink, but widen the age, gender, and education disparities, particularly in personal information skill measures.

This may well be the case because of a lack of social resources available among marginalized groups to translate concern into a meaningful set of skills (cf. Acquisti & Grosslags, 2005). Also conceivably, for older users, the use of new technology brings with it a sense of computer anxiety, which may remain a psychological barrier (Jung et al., 2010). Putting this finding within the context of the significant interplays between Internet access factors and social–demographic status, it suggests that vulnerability based on offline status may deepen when combined with other factors. Here it is interesting that a level of surveillance concern of perceived information control did not interact with years of Internet experience and daily online use. This may indicate that status-based inequalities in interplay with surveillance concern are likely to persist independent of levels of Internet access factors. That is, the status of marginalized social groups and associated disadvantages play a consistent role even when surveillance concern becomes salient, and further constrain those with fewer assets in their efforts to understand and resist surveillance control.

From a theoretical perspective, the findings support the view that much of new technology adoption and information use is embedded in the preexisting social context (e.g., Zillien & Hargittai, 2009). No intrinsic effect of Internet on social mobility seems evident, as users' social positions influence Internet-based personal information skill and use and, in combination with levels of surveillance concern, largely reinforce existing social inequalities. Note that even the mobilizing impact of Internet access factors in a few skill dimensions—such as using multiple accounts and rectifying data surveillance—happens within the context of an elevated sociodemographic gap that is far more magnified than initially imagined. Overall, the confluence of sociodemographic and Internet access factors is contributing to digital disparities in the domain of information privacy. Social differences are being replicated through typical sociodemographic indicators (Bourdieu, 1984) such as income, education, gender, age, and ethnic background (albeit in their unitary influences), with the possession of Internet access factors adding a critical source of digital exclusion (cf. Castells, 2003; Dimaggio et al., 2001; Fisher, 1994).

Research in the privacy field has suffered from a lack of systematic attention on social stratification, implicitly attributing skill and knowledge deficiency to individual shortcomings alone (Gandy, 2009; also see Marx, 2003). While this may be the case for some users, it is also important to recognize that the use of new technology has always been socially conditioned and incubated (Fisher, 1994; Sandvig, 2011). As few studies have attempted to test this relationship in the realm of information privacy, this study explored whether Internet-based personal information skill and knowledge are in fact the product of social habitats in which some are better positioned than others. The study's results demonstrate, empirically through logistic regressions on unitary skill and knowledge items, that the reproduction hypothesis (Dimaggio et al., 2001; Zillien & Hargittai, 2009) wins a critical point.

Policy Implications

Looking at Internet policy, our specific concern should be about the Internet-based personal information abilities of older people, non-Whites, women, those with lower income and education, and those who have been marginalized to less privileged positions with regard to Internet access. On the FCC policy side, infrastructure access-based initiatives (FCC, 2011; also see National Telecommunications and Information Administration, 2010), in their continuous silence regarding those social sectors that are lagging behind in skill and knowledge, remain critically misguided. On the Federal

Trade Commission (FTC) side, the policy neglect of social stratification is also conspicuous. For instance, FTC's latest proposal that was designed to permit individuals to opt out of online behavioral targeting in fact failed to recognize how different levels of user skill and knowledge may hamper the success of such policy implementation (Park, 2011a).

The net result is the absence of user-oriented policy strategies in equalizing levels of economic participation or civic activity online (Bamberger & Mulligan, 2011; Park, 2011b). In other words, there is a separation between policy makers' emphases and the de facto problem of stratification in user capabilities (see Boyd, Hargittai, Schultz, & Palfrey, 2011, for a similar review of Children Online Privacy Protection Act). There remains a clear need for development of policies that are sensitive to sociodemographic status and focus on the enhancement of digital skill and knowledge, in place of the assumption of universal, equitable information ability.

One possible alternative policy initiative would be the initiation of community-based education programs. Dissemination of personal information skill and knowledge is a salient issue in marginalized communities, as lacking the power to understand and resist surveillance can have negative consequences such as potential discrimination in one's digital engagement (Agre, 1998). The FCC and FTC could support community initiatives to train older people, women, or those with low income in information related to Internet use.[7] More importantly, the theoretical insight of this study that offline social status incubates the equipment of online readiness should also inform policy makers of a reasonable reverse scenario in which Internet use, access, and knowledge possibly have an effect on one's offline social mobility (cf. Gilbert, Karahalios, & Sandvig, 2010; Sandvig, 2011).

In this regard, a longitudinal panel study in a more updated data set should further test the theoretical insight of disparity reproduction by examining the extent of the resilience of status-specific digital disparities over time. Further, the trend data in the inclusion of civic and political behavioral measures can compare status-specific disparities in related online domains, which this study's cross-sectional data cannot demonstrate. Caution is also needed because the cross-sectional nature of this study with the limited number of measures could not validate causal linkage. In other words, temporal order of causality is not established in this study. Here we have seen only a few measures of knowledge, skill, and concern in key dimensions of information privacy, in association with individuals' sociodemographic status and Internet access factors. Other theorized constructs of online status such as information competency await more empirical support before we can make further generalization. Finally, it should be considered that this study's findings pertain to the U.S. context, while different patterns possibly exist in other European or Asian settings. Systematic attention to marginalized user segments is overdue, as it is no longer acceptable to consider personal information skill and knowledge the exclusive benefits of those privileged. To empower the social agents of particularly vulnerable groups by advancing skills and awareness can break the pattern of digital reproduction of social inequalities.

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Notes

1. It is very insightful to recognize that theoretically, this study can be situated in the frame of the second-level digital divide (Hargittai, 2002) that explores the presence of digital divide in terms of use beyond the concern of access. Still, this particular study situates itself in a broader notion of social stratification within which the second-level divide can be a subset of stratification concern (Hargittai, 2004). We believe this broad premise is particularly useful in that the analytical focuses of this study are on both (1) access divide and (2) social divide and (3) their interactions, with associated replication and mobilization hypotheses.
2. There are some exceptions, as a few advanced studies with normative concerns (e.g., Acquisti & Grosslags, 2005) explore interactions between social and individual factors rooted in behavioral economics.
3. We rule out scale construction in favor of nuanced analysis of unitary measures. Scholars (Marcus, MacKuen, & Neuman, 2011) debated complexity that may be observed in discrete dimensions over parsimony that opts for a simple account with reduced number of items. Although limitations inherent to discrete analysis hinder simplified claims, we still expect the analytical precision if such analyses can observe discrete patterns such as copresence of mobility and reinforcement, thus allowing us to rule out the other option in context of this study.
4. The order of the explanatory variables in regression analyses did not introduce substantial change in significance.
5. We plotted the interactions, using β coefficients (log odds) in the final equations after controlling for all other variables. For the purpose of demonstration, the combination of 0 (*low*) and 1 (*high*) was assigned to each of the four groups represented in the graph.
6. The significant association of perceived information control was present but marginal, not as consistent as Internet access and age. As a block, the perceived control accounted for only 4% of the variance. This result may be surprising, given that it is the most direct item used to measure individuals' psychological concern related to data surveillance. Yet, the result is in line with prior studies that showed nonimpact of privacy concern. More importantly, this finding is consistent with a prior finding that shows a relatively weak relationship between topic-specific interests and various online activities (e.g., Zillien & Hargittai, 2009), indicating that interest, motivation, or concern alone may not be a sufficient determinant of use and knowledge variations in the Internet.
7. Here caution is necessary as some significant research on social privacy (e.g., Boyd & Hargittai, 2010) in fact found that women engage in more privacy protective behavior than men. Thus, it is important to recognize that these recommendations are about policies related to Internet-based data surveillance rather than privacy in a more general term.

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