

Why We Share: A Uses and Gratifications Approach to Privacy Regulation in Social Media Use

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The contradiction between the stated preferences of social media users toward privacy and actual privacy behaviors has suggested a willingness to trade privacy regulation for social goals. This study employs data from a survey of 361 social media users, which collected data on privacy attitudes, online privacy strategies and behaviors, and the uses and gratifications that social media experiences bring. Using canonical correlation, it examines in detail how underlying dimensions of privacy concern relate to specific contexts of social media use, and how these contexts relate to various domains of privacy-protecting behaviors. In addition, this research identifies how specific areas of privacy concern relate to levels of privacy regulation, offering new insight into the privacy paradox. In doing so, this study lends greater nuance to how the dynamic of privacy and sociality is understood and enacted by users, and how privacy management and the motivations underlying media use intersect.

The use of social media has become ubiquitous, with 73% of all US adults using social network sites today and significantly higher levels of use among young adults and females (Smith, 2014). Individuals use social media for a variety of purposes: to pass time, maintain relationships, meet new people, keep up with current trends, and gather social information. As use of these platforms has grown, researchers have sought to understand how their use intersects with effects, and to identify potential impacts for relationships, social goals, and valued outcomes such as privacy and sociality.

By design, social media technologies contest mechanisms for control and access to personal information, as the sharing of user-generated content is central to their function.

Moreover, because these platforms often trade on user-generated content to secure and maintain their economic viability, the ways in which such information is used by platform sponsors can be opaque. Accordingly, the use of social media often challenges established mechanisms of boundary maintenance that individuals employ in everyday life, such as selectively disclosing information to specific individuals. As these platforms move toward everyday invisibility, it becomes critical to understand how motivation for their use relates to everyday activities such as privacy regulation, and how it manifests in decision-making and boundary control. In an effort to broaden this understanding, this study examines social media's uses and gratifications and their relationship with privacy attitudes and behaviors.

Privacy and Social Media Uses

The uses and gratifications approach dates to early empirical mass communication research and theorizes that individuals have particular motives for using media and they are active and goal-directed in meeting their needs (Katz, 1959; Rubin, 2009). The term "uses and gratifications" refers to the uses that audiences have for employing media and the gratifications sought from media use. While gratifications sought from media use are distinct from gratifications actually obtained from such use, the two are strongly correlated and continued use of a medium over time implies that gratifications sought are reinforced by gratifications obtained (Levy & Windahl, 1984; Palmgreen, Wenner, & Rayburn, 1980). Research has grouped media gratifications into three distinct categories: those based on content that media carries (content gratifications), those based on experience of using the media (process gratifications), and those based on social interactivity that media facilitate (social gratifications) (Stafford, Stafford, & Schadtke, 2004). Media scholars have argued that strong linkages exist between the uses and gratifications that are sought from various media and the activity that takes place before, during,

and after the use of such media (e.g., Levy & Windahl, 1984). While the uses and gratifications of various social media have been previously mapped by researchers (e.g., Park, Kee, & Valenzuela, 2009; Quan-Haase & Young, 2010), how uses of these platforms intersect with privacy activities is now garnering attention.

The use of social media for informational and entertainment purposes is positively associated with the use of an anonymous profiles (Lampe, Wash, Velasquez, & Ozkaya, 2010) and users motivated by social media's communicative dimensions more actively adjust privacy settings (Spiliotopoulos & Oakley, 2013). Early studies of social media demonstrated a positive link between the disclosure of personal information and users' number of friends (Lampe, Ellison, & Steinfield, 2007) and a negative association between the use of privacy settings and the use of social media to meet new people (Joinson, 2008), suggesting that privacy behaviors may be related to social gratifications.

Further research has reinforced that the relationship between privacy and sociality is quite complex. While positive links exist between the use of privacy controls and social capital outcomes (Ellison, Vitak, Steinfield, Gray, & Lampe, 2011), privacy attitudes may constrain social media disclosure and negatively impact the accrual of social capital benefits (Stutzman, Vitak, Ellison, Gray, & Lampe, 2012). Users perceive it necessary to exchange personal information to realize social goals and attain the social capital benefits that social media offer (Ellison et al., 2011) and that the risk of unintended disclosure is mitigated by the social convenience for relational management (Krasnova, Spiekermann, Koroleva, & Hildebrand, 2010). The linkage between social capital gains and social gratifications is not well mapped, however, so additional research in this area is needed.

Finally, research on bloggers suggests that privacy management practices, such as how

much personal information is revealed or whether content is later deleted, are related to the timing of media deployment, i.e., before, during, or after blogging activity takes place (Child, Haridakis, & Petronio, 2012), providing additional linkage between media use and privacy activity. When considered collectively, these studies suggest that a uses and gratifications approach may be useful for informing the relationship between social media use and privacy management.

Privacy Attitudes and Behaviors

A growing number of studies have examined privacy attitudes as a precursor to social media privacy behaviors. While these concepts seem to be related linearly, they ironically do not often correlate well (Reynolds, Venkatanathan, Gonçalves, & Kostakos, 2011; Taddicken, 2014; Zafeiropoulou, Millard, Webber, & O'Hara, 2013). Users of social media demonstrate strong concerns about privacy online (Buchanan, Paine, Joinson, & Reips, 2007; Young & Quan-Haase, 2009), yet often do not engage in privacy-protecting behaviors such as adjusting privacy controls (Debatin, Lovejoy, Horn, & Hughes, 2009; Tufekci, 2008), restricting disclosure of geo-location information (Zafeiropoulou et al., 2013), or altering initial privacy choices after network growth (Strater & Lipford, 2008). The apparent contradiction between privacy preferences and privacy-protecting activities has puzzled researchers, and has been deemed the "privacy paradox" (Barnes, 2006).

Some have suggested that the privacy paradox is temporal: as users become more aware of the potential hazards of information sharing, they renegotiate public/private boundaries and enact privacy-producing strategies (Lewis, Kaufman, & Christakis, 2008; Utz & Kramer, 2009). Individual engagement of privacy controls has also increased over time (e.g., Dey, Jelveh, & Ross, 2012). Users restrict status updates to select others (Vitak & Ellison, 2013) and create multiple profiles to maintain social boundaries (Stutzman & Hartzog, 2012). This signals that the privacy

paradox may be shrinking and privacy managed more consciously as users gain social media experience.

Other studies, however, suggest that the privacy paradox has not diminished. Recent work supports continued non-correlation between privacy attitudes and privacy behaviors (Zapeiropoulou et al., 2013) and that underestimation of network size results in differences between privacy concerns and behaviors (Reynolds et al., 2011). Users permit broad access to certain types of information, such as location data and photos, despite concerns that it might result in privacy violations (Taddicken, 2014; Zafeiropoulou et al., 2013). Researchers have pointed to user motivations, and in particular the social gratifications of social media, for this persistence (Ellison et al., 2011; Krasnova et al., 2010). While motivation for social media use is a potential avenue for exploration, scant attention has been paid to the intersection of identifiable domains of privacy concern and specific privacy behaviors.

To explore privacy and social media through a uses and gratifications approach, we must begin with the attitudes which influence privacy regulation and how these intersect with social media uses. This prompts the first research question:

RQ1: How do privacy concerns relate to the uses and gratifications of social media use?

Many studies on privacy behaviors focus on dichotomous capture of singular privacy actions, such as change from default privacy settings, limiting the audience for specific posts, or deleting tags on photos. Yet, there is growing evidence that privacy behaviors may be socially enacted, e.g., not accept a friend request, or executed in tandem with other strategies, e.g., engage privacy controls and also untag specific photos (McLaughlin & Vitak, 2012; Quinn, 2014). To explore how uses of social media relate to these types of privacy actions, a second research question is posed:

RQ2: How do the uses and gratifications of social media use relate to privacy behaviors?

Finally, though studies have explored the relationship between privacy concerns and privacy behaviors (e.g., Krämer & Haferkamp, 2011), the persistence of the privacy paradox underscores a continued need to examine how the relationship between privacy attitudes and privacy behaviors is evolving. Thus, a third research question is proposed:

RQ3: How do privacy concerns relate to privacy behaviors?

Addressing these questions will provide additional insight into social media privacy management process and enhanced understanding of the relationship between sociality and privacy.

Method

A self-administered, web-based survey tool was used to collect data on privacy concerns, online privacy strategies and behaviors, and the uses and gratifications of social media. Prior research indicated that further exploration of the dimensions of these measures would be useful (Buchanan et al., 2007; Papacharissi & Mendelson, 2011), therefore exploratory factor analysis was conducted. Canonical correlation analysis was then employed to assess the relationships between identified uses and gratifications of social media and dimensions of privacy concerns and privacy behaviors. To explore RQ3, canonical correlation was also performed on the privacy concerns and privacy behaviors variables.

Canonical correlation analysis is a method of statistical analysis that investigates relationships between sets of variables, when each set consists of two or more variables. It easily conceptualized by comparison to multiple regression analysis. Whereas multiple regression analysis compares a set of independent variables to a *single* dependent outcome, canonical correlation analysis enables comparison of independent variables to a *set* of dependent variables.

Figure 1 shows a diagram illustrating this method.

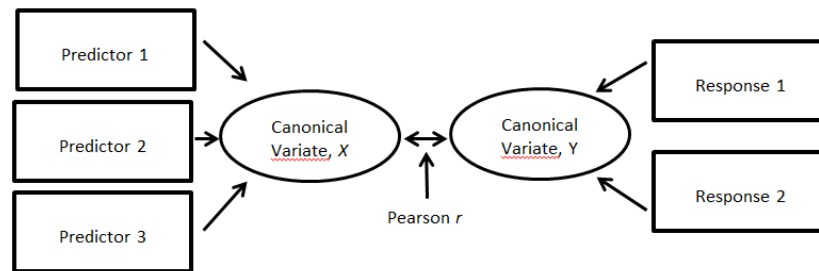


Figure 1 Illustration of canonical correlation analysis. The canonical correlation is the simple Pearson r between the canonical variates, which are combined linearly from the observed variables.

An exploratory technique, canonical correlation analysis is useful when the underlying dimensions representing the combination of variables is unknown (Tabachnick & Fidell, 2013), as it provides the contribution of individual variables to the explanatory power of each variable set to facilitate interpretation (Thompson, 1984). As a multivariate technique, it has the advantage of limiting Type I errors (Sherry & Henson, 2005). The most important benefit lies in its honest reflection of the realities of social science research: the study of human behavior often reflects multiple causes and effects. Canonical correlation analysis permits exploration with less distortion than methods that examine singular causes or effects (Sherry & Henson, 2005).

The convenience sample consisted of 361 undergraduate students attending a large U.S. university. Participation was voluntary, and participants received extra credit in their courses and were provided with a URL linking to the online survey both in paper and digital formats. Data was screened for missing values, and univariate and multivariate outliers prior to analysis. From the total number of participants, responses of 8 multivariate outliers were deleted, making the total sample size $n=353$. This sample size was deemed adequate for the subsequent analyses based on an analysis of communalities and component loadings (for principal components analyses) and variable reliabilities and subject-to-variable ratios (for canonical correlations).

Measures

Uses of social media. Forty-three questions, based on previous uses and gratifications research (Papacharissi & Mendelson, 2011; Papacharissi & Rubin, 2000) were included using a five-point Likert scale, related to habitual passing time, relaxing entertainment, expressive information sharing, escapism, social interaction, professional advancement, social information gathering, companionship, and inclusiveness.

Privacy attitudes. Twenty-eight items, related to privacy attitudes (Buchanen et al., 2007), concerns about unwanted audiences (Young & Quan-Haase, 2009), and privacy concerns (Tufekci, 2008), were included using a five-point Likert scale.

Privacy behaviors. Nineteen questions on privacy activities were included using a five-point Likert scale, related to privacy protection strategies (Young & Quan-Haase, 2009) and precautionary and technical privacy behaviors (Buchanen et al., 2007).

Sample

The mean age of participants was 21.2 years (SD=2.76, range=18-45, Mdn=21.0). Female participants (n=216, 61.2%), outnumbered male participants (n=136, 38.5%, 1 missing value) and the racial/ethnic composition was: White 39.9% (n=141); Hispanic/Latino 23.8% (n=84); Asian 21.8% (n=77); African-American 4.5% (n=16); Native American/Pacific Islander 2.6% (n=9); Multi-ethnic/Other/Undisclosed 7.1% (n=25). Participants were active users of social media, with 79.3% (n=277) reporting two or more social media profiles and 86.7% (n=306) accessing their favored social media site at least once/day.

Uses and Gratifications of Social Media

The 43 uses and gratifications items were analyzed through exploratory factor analysis, using principal components extraction with Varimax rotation. Examination of the rotated

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component solution revealed that five items loaded on multiple factors with differences of less than .15, thus were eliminated from the analysis. Nine components resulted from the remaining 38 items, and were consistent with other uses and gratifications studies of social media (e.g., Papacharissi & Mendelson, 2011). The nine retained components showed strong variable loadings in excess of .50 with items loading substantially on only one component (Osborne & Costello, 2005), and explained 77.9% of the total variance. These are summarized in Table 1.

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Table 1 – Factor Loadings for the Uses and Gratifications Items

Item	Affect	Companion	Voyeur	Info Sharing	Habit	Entertain	Communicate	Professional Use	Escape	C
Help others	0.827									0.866
Show encouragement	0.823									0.877
Because I am concerned about others	0.798									0.829
Let others know I care	0.763									0.813
Thank others	0.725									0.775
Makes me feel less lonely		0.831								0.877
Reassuring to know someone is there		0.816								0.846
So I won't have to be alone		0.773								0.822
When there's no one else to talk to		0.759								0.800
Everyone else is doing it		0.575								0.774
Find information about people I don't know			0.783							0.822
Find information about others			0.775							0.822
Enjoy browsing profiles			0.774							0.793
Enjoy stumbling on information about people			0.758							0.787
Find information on people before I meet them			0.660							0.630
Present information about my special interests				0.764						0.707
Share useful information				0.748						0.735
Provide information				0.730						0.630
Provide personal information				0.675						0.691
Tell others about myself				0.647						0.704
It passes time					0.868					0.857
When I have nothing better to do					0.825					0.754
Gives me something to do					0.801					0.784
It's a habit					0.670					0.620
Relaxes me						0.881				0.890
It allows me to unwind						0.859				0.854
It's a pleasant rest						0.851				0.860
It's enjoyable						0.608				0.686
Communicate with distant friends							0.803			0.766
Keep in touch with friends/family							0.780			0.767
To keep in touch with people							0.695			0.738
How people communicate today							0.564			0.692
Network with professional contacts								0.898		0.891
Post my resume online								0.867		0.865
Helpful for professional future								0.821		0.803
Get away from what I am doing									0.797	0.797
Get away from others									0.779	0.813
To forget about school or work									0.765	0.791
% of variance	38.0	8.6	7.2	5.9	4.6	4.0	3.5	3.2	2.8	
α	.942	.913	.917	.875	.878	.906	.846	.916	.862	

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The first component, *Affect* ($M=2.85$, $SD=1.05$, $\alpha=.94$) relates to the use of social media to show care or concern for others or express thanks and encouragement. *Companionship* ($M=2.37$, $SD=1.08$, $\alpha=.91$) refers to social media use to reduce loneliness and enhance feelings of others' presence. *Voyeur* ($M=3.10$, $SD=1.05$, $\alpha=.92$) denotes social media use for finding information about others. *Information Sharing* ($M=3.09$, $SD=.95$, $\alpha=.94$) uses social media to tell others about oneself or post useful information. *Habit* ($M=3.70$, $SD=1.01$, $\alpha=.88$) describes habitual use of social media out of boredom, to pass time or when there is nothing better to do. *Entertainment* ($M=3.03$, $SD=1.07$, $\alpha=.91$) is use of social media for enjoyment, pleasure and relaxation. *Communication* ($M=3.57$, $SD=1.02$, $\alpha=.85$) is use of social media to keep in touch with family or distant friends. *Professional Use* ($M=2.41$, $SD=1.16$, $\alpha=.92$) indicates use for career advancement, such as posting a resume or networking with professional contacts. Finally, *Escape* ($M=2.80$, $SD=1.14$, $\alpha=.86$) describes use to escape from everyday concerns or to get away from the task at hand.

Examination of the mean scores for each of these factors highlights the primary uses of social media as communication and the sharing and seeking of information. The presence of *Habit*, emerging with four high loading items and largest mean, is somewhat novel and lends weight to the argument that habitual social media use is a type of gratification and not a separate construct. Overall, these factors provide a rich and diverse set of social media uses through which privacy attitudes and behaviors can be explored.

Privacy Concerns

Exploratory factor analysis was again used to analyze the 28 privacy concerns items, using principal components extraction with oblimin rotation and Kaiser Normalization. Oblimin rotation was used because it was assumed that the underlying components may be correlated (Tabachnick

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& Fiddell, 2013); this was confirmed by examining the component correlation matrix. Visual analysis of the resulting scree plot suggested a four factor solution, confirmed through a Monte Carlo parallel analysis (Ledesma & Valero-Mora, 2007). Two items loaded on factors with a loading difference of less than .15; and were deleted from the matrix. The 26 remaining items had strong factor loadings, no significant cross loadings, and explained 72.2% of the total variance. Table 2 provides a summary.

Table 2 - Factor Loadings for Privacy Concern Items

Item	Pattern Coefficients				C
	Information Control	Future Life of Information	Power Loss	Identity Loss	
How concerned are you about...?					
Email inappropriately forwarded?	.884				.757
Email printed and left where others could see it?	.848				.746
Email read by a non-intended recipient?	.815				.782
Virus could send out emails in your name?	.789				.739
Email not from who it says?	.737				.769
Internet address is fraudulent	.736				.739
Unwanted access to e-health records	.667				.637
Unknown others obtaining information about your internet activities	.543				.683
Personal information found on old computers	.541				.699
Employer looks at profile in future		.890			.752
Corporation looks at profile in future		.876			.814
Government agency looks at profile in future		.801			.685
Romantic partner looks at profile in future		.716			.530
Employer uses social media to monitor extra-curricular activities			-.909		.845
Universities use social media to monitor code violators			-.907		.836
Admissions office uses social media to screen applicants			-.843		.793
Employers use social media to screen candidates			-.829		.782
Police use social media to track underage drinking			-.753		.732
Political parties use social media to target advertising			-.721		.704
Sexual predators use social media to track potential victims			-.501		.614
How much personal information is asked of you when you register online				.837	.773
Online identity theft				.765	.754
Your privacy when using the internet				.758	.619
Online organizations not who they say they are				.697	.691
People online not who they say they are				.660	.650
% of variance	50.4%	9.7%	7.4%	4.8%	

The first component, *Information Control* ($M=3.32$, $SD=1.09$, $\alpha=.95$), includes concerns

about email being read by unintended recipients or unwanted others accessing sensitive information such as electronic medical records. *Future Life of Information* ($M=3.64$, $SD=1.00$, $\alpha=.84$) relates concerns about the future use of information to judge the individual. *Power Loss* ($M=3.24$, $SD=1.11$, $\alpha=.94$) incorporates concerns about the misuse of information by those in holding power, such as governments, universities, or sexual predators. *Identity Loss* ($M=3.70$, $SD=1.00$, $\alpha=.89$) includes concerns regarding deception and identity theft. Examining the mean scores of these factors provides an indication that concerns for identity protection and how information might be used in the future are significantly higher than having personal information reach unintended audiences or be misused by those in authority ($t=5.06$, $df=352$, $p<.001$). It also provides a hierarchical framework for evaluating privacy concerns.

Privacy Activities

The 19 items related to privacy behaviors were also examined to reveal dimensions of online privacy behaviors. Exploratory factor analysis using principal components extraction with oblimin rotation and Kaiser Normalization was employed; correlation of the underlying components was confirmed through analysis of the component correlations. Examination of the correlation matrix prompted elimination of one item with low communality and two additional items with cross-loadings, resulting in 16 items. Visual analysis of the scree plot suggested a four factor solution, confirmed through a Monte Carlo parallel analysis. The four components showed strong variable loadings and explained 66.3% of the total variance, as summarized in Table 3.

Table 3 - Factor Loadings for Privacy Activity Items

Item	Pattern Coefficients				C ¹
	Basic Security	Social Curation	Stealth Measures	Systemic Controls	
Do you...?					
Use a pop up blocker	.843				.674
Check computer for malware	.795				.663
Remove cookies	.694				.603
Check URL before entering sensitive information	.637				.471
Clear browser history regularly	.516				.418
Filter newsfeed		-.812			.706
Untag self from photos/videos		-.792			.687
Create separate account for junk email		-.761			.564
Delete wall postings to prevent others from reading		-.707			.651
Use encryption for transmitting data or email			.897		.787
Use proxy server for internet			.854		.784
Use browser plug in			.657		.663
Restrict contacts to limited profile information				-.879	.781
Block former contacts from accessing profile				-.821	.785
Block messages from unwanted others				-.782	.702
Change privacy settings from default				-.695	.673
% of variance	35.1%	14.3%	8.9%	8.0%	

Basic Security ($M=3.18$, $SD=.95$, $\alpha=.79$) describes use of measures such as pop-up blockers, clearing browsing history and examining URLs before entering sensitive information. *Social Curation* ($M=3.02$, $SD=.96$, $\alpha=.80$), is culling posted information, untagging photos, or deleting comments made by others. *Stealth Measures* ($M=2.09$, $SD=1.01$, $\alpha=.82$) concerns the use of proxy servers, privacy browser plug-ins, and message encryption. *Systemic Controls* ($M=3.39$, $SD=1.09$, $\alpha=.87$), includes the use of privacy controls built into most social media platforms, such as restricting access to profiles and blocking unwanted contacts. Examination of these mean scores suggests a hierarchy in the measures taken to protect privacy in using social media. *Systemic Controls* are most frequently deployed as a first level of defense, followed by *Basic Security* and *Social Curation*. Not surprisingly, *Stealth Measures* is least used, and significantly less common than *Social Curation* ($t=13.56$, $df=352$, $p<.001$).

RQ1: How do the gratifications of social media use relate to privacy concerns?

The first research question sought to explore the relationship between the uses of social

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media and privacy concerns. Canonical correlation analysis was conducted using the four Privacy Concerns variables and nine Uses and Gratifications variables. The analysis yielded four functions with squared canonical correlations (R_c^2) of .101, .056, .034, and .024 for each successive function. Collectively, the full model across all functions was statistically significant using the Wilks's λ criterion ($\lambda=.800$, $F(36, 1272.13)=2.17$, $p<.001$). Because Wilks's λ represents the variance unexplained by the model, $1-\lambda$ yields the full model effect size in an r^2 metric. Thus, for the set of four canonical functions, $r^2=.200$. Functions 2 to 4 were also statistically significant, $F(24, 986.7)=1.69$, $p=.02$, however Functions 3 to 4 and Function 4 did not explain a statistically significant amount of shared variance between the variable sets ($F(14, 682.0)=1.46$, $p=.12$, and $F(6, 342)=1.39$, $p=.22$, respectively). Given these R_c^2 effects, only the first two functions are considered noteworthy, accounting for 15.6% of shared variance, as summarized in Table 4.

In canonical correlation analysis, functions describe distinct dimensions of the underlying relationship between the variable sets. The canonical function coefficient of each variable represents the unique contribution that variable makes in a linear regression on the canonical function/variante. The structure correlation coefficient represents the simple correlation between the variable and the canonical variate. Both coefficients are considered when evaluating the effects of a given variable in the canonical solution.

Table 4 - Canonical Solution for Privacy Concerns and Uses and Gratifications

Variable		Function 1			Function 2			h ² (%)
		Coef	r _s	r _s ² (%)	Coef	r _s	r _s ² (%)	
Privacy Concerns	Information Control	-0.404	-0.248	6.1%	-1.236	-0.073	0.5%	6.7%
	Future Life of Information	0.823	0.708	50.2%	0.279	0.323	10.4%	60.6%
	Power Loss	0.475	0.179	3.2%	0.121	0.125	1.6%	4.8%
	Identity Loss	-0.596	-0.389	15.1%	1.352	0.595	35.4%	50.5%
Uses & Gratifications	R _c ²			10.1%			5.6%	
	Affect	-0.258	0.353	12.5%	-0.056	-0.056	0.3%	12.8%
	Companionship	0.010	0.526	27.6%	-0.580	-0.328	10.8%	38.4%
	Voyeur	0.735	0.862	74.3%	0.004	0.097	1.0%	75.2%
	Info Sharing	0.130	0.596	35.6%	0.104	0.074	0.5%	36.1%
	Habit	0.294	0.655	42.9%	0.410	0.329	10.8%	53.7%
	Entertainment	0.332	0.633	40.1%	-0.140	-0.239	5.7%	45.8%
	Communication	-0.175	0.407	16.6%	0.860	0.556	30.9%	47.5%
	Professional Use	0.222	0.453	20.5%	-0.258	-0.217	4.7%	25.2%
	Escape	-0.130	0.439	19.2%	-0.350	-0.275	7.5%	26.8%

Note: Coef = standardized canonical function coefficient; r_s = structure coefficient; r_s² = squared structure coefficient; h² = communality coefficient.

Examining the Function 1 canonical coefficients, we can see that the relevant variable is *Future Life of Information* (r_s²=.502), or concern that information will be misconstrued in the future. Examination of the canonical function coefficients also highlights that the remaining three variables are approximately equivalent secondary contributors to the canonical variate.

Differences in sign indicate complexity: *Information Control* and *Identity Loss* are negative, while *Power Loss* is positive. When considered in conjunction with the related structure coefficient (r_s), the strong function coefficients of *Information Control* and *Power Loss* indicate that a suppressor effect is present; in other words, the presence of these variables strengthen the relationships of other variables with the canonical variate, primarily by eliminating error in the model.

Regarding the Uses and Gratifications items, *Voyeur* (r_s²=.743), or the use of social media to find information about others, is the largest contributor of the variable set, accounting for about 74% of variance in the canonical variate. Of secondary importance are *Habit* (r_s²=.429) and *Entertainment* (r_s²=.401). It is notable that these secondary variables have modest canonical function coefficients, but larger structure coefficients; this phenomenon often results from

multicollinearity with the other Uses and Gratifications variables.

To tease out the complexities of suppressors and multicollinearity, the canonical variates from the first canonical function were subjected to canonical commonality analysis (Nimon, Henson, & Gates, 2010), a process which partitions the Privacy Concerns variables into the Uses and Gratifications set, and vice-versa, to show each variable's unique and shared contribution to the other canonical variate. This form of analysis helps to clarify the role that multicollinearity and suppression plays among the variables, and simplifies the relationships between the standardized function and squared structure coefficients. Commonality analysis demonstrates that the unique contribution of *Future Life of Information* is high relative to the other variables in the set, underscoring its importance in predicting the use of social media for social information gathering, *Voyeur*. Thus, the first function is indicative of a "lurking approach" to social media privacy. In other words, concern about how posted information may be used in the future prods individuals to use social media primarily to gather social information, instead of using it to share information about oneself or to emotionally support others.

The second function highlights that *Identity Loss* ($r_s^2=.354$), or the concern that providing personal information online can result in identity theft, is the primary contributor. The large and negative function coefficient of *Information Control* ($r_s^2=.005$, Coef=-1.236) indicates a suppressor; commonality analysis confirms this. Examining the Uses and Gratifications variable set, we can see that *Communication* ($r_s^2=.309$), or the use of social media to keep in touch with friends, family and those who are distant, is of primary importance. Taken together, this dimension demonstrates that concerns about the misuse of identity lead to more instrumental uses of social media. That is, concerns about identity (either own or that of others) propels users to employ social media in practical and purposeful ways, such as maintaining contact with friends and family that

are distant, rather than as a vehicle for sharing of the self or companionship.

As a final step, it is helpful to examine the communality coefficients, as these represent a measure of the utility of individual variables across all interpreted functions; h^2 is an indication of which variables are useful in defining the overall relationship between the variable sets (Thompson, 2000). Here, communality coefficients reinforce that concerns for the *Future Life of Information* ($h^2=.606$) and *Identity Loss* ($h^2=.505$) are important to how social media is employed, and have strong relationships with social media uses of *Voyeur* ($h^2 = .752$), *Habit* ($h^2=.537$), and *Communication* ($h^2 = .475$).

RQ2: How do the gratifications of social media use relate to privacy behaviors?

To address RQ2, a canonical correlation analysis was conducted using the Uses and Gratifications and Privacy Behaviors variables. The analysis yielded four functions with squared canonical correlations (R_c^2) of .155, .095, .056, and .030 for each successive function. Collectively, the full model across all functions was statistically significant, with $r^2=.300$ (Wilks's $\lambda=.700$, $F(36, 1275.87)=3.53$, $p<.001$). Functions 2 to 4 and Functions 3 to 4 were also statistically significant, $F(24, 989.6)=.829$, $p<.01$ and $F(14, 684)=.916$, $p=.007$, respectively. Function 4 did not explain a statistically significant amount of shared variance between the variable sets, $F(6, 343)=.970$, $p=.106$. Given the R_c^2 effects for each function, the first three functions are considered noteworthy, accounting for 30.6% of shared variance. Table 5 summarizes the canonical solutions for Functions 1, 2 and 3.

Table 5 - Canonical Solution for Uses and Gratifications and Privacy Behaviors

Variable		Function 1			Function 2			Function 3			h ² (%)
		Coef	r _s	r _s ² (%)	Coef	r _s	r _s ² (%)	Coef	r _s	r _s ² (%)	
Privacy Behaviors	Basic Security	-0.281	-0.086	0.7%	0.540	-0.017	0.0%	-.172	.235	5.5%	6.2%
	Social Curation	-0.062	-0.250	6.2%	-0.826	-0.863	74.5%	-.747	-.293	8.6%	89.3%
	Stealth Measures	1.083	0.723	52.3%	-0.357	-0.343	11.8%	.179	.413	17.1%	81.2%
	Systemic Controls	-0.566	-0.312	9.8%	-0.314	-0.553	30.6%	1.060	.706	49.8%	90.2%
R_c²				15.5%			9.5%			5.6%	
Uses & Gratifications	Affect	-0.267	0.070	0.5%	0.376	-0.419	17.5%	-.048	-.078	.6%	18.6%
	Companionship	0.574	0.378	14.3%	-0.083	-0.539	29.0%	-.752	-.424	18.0%	61.3%
	Voyeur	0.269	0.162	2.6%	0.163	-0.573	32.8%	.421	.062	.4%	35.9%
	Info Sharing	-0.228	-0.004	0.0%	-0.284	-0.641	41.0%	.031	-.027	.1%	41.1%
	Habit	-0.417	-0.314	9.9%	-0.234	-0.637	40.6%	-.838	-.566	32.0%	82.5%
	Entertainment	0.002	0.049	0.2%	0.060	-0.429	18.4%	-.194	-.308	9.5%	28.1%
	Communication	-0.452	-0.209	4.4%	-0.557	-0.757	57.4%	.479	.165	2.7%	64.4%
	Professional Use	0.792	0.671	45.0%	-0.293	-0.504	25.4%	.065	.050	.2%	70.6%
	Escape	0.003	0.040	0.2%	-0.468	-0.707	50.0%	.545	.066	.4%	50.5%

See notes for Table 4.

In Function 1 ($r_s^2=.155$), the largest Uses and Gratifications contribution is *Professional Use* ($r_s^2=.450$), or the use of social media to post a resume or network with professional contacts, and is supported by examination of the function coefficients. Review of the Privacy Behaviors variable set reveals *Stealth Measures* ($r_s^2=.523$), or the use of proxy servers, privacy browser plug-ins and encryption to be the major contributor. This function reveals a dimension of social media privacy activity that might be characterized as reputation preservation, as it suggests that if an individual is using social media for professional purposes, he or she may be more diligent in guarding such reputation through the use of more comprehensive privacy enhancing technologies while online.

Function 2 ($R_c^2=.095$) demonstrates that the use of social media for *Communication* ($r_s^2=.574$) and *Escape* ($r_s^2=.500$) are the largest contributors to the criterion canonical variate. Several other Uses and Gratifications have large structure coefficients as well, such as *Information Sharing* ($r_s^2=.410$) and *Habit* ($r_s^2=.406$), however their relatively low function coefficients suggest this may result from shared variance with the other variables. A commonality analysis confirms

the significance of *Communication* and *Escape* to the canonical solution. The use of social media for *Escape* is an interesting addition to this dynamic, and yet not as contradictory as it may appear on the surface. Unlike other media forms that offer the ability to get away as an alternative to interaction, social media is social; it invites interaction with others, though perhaps not with those physically co-present or in synchronicity. *Escape*, in the context of social media use, does not signify fleeing the presence of others as it might with less interactive media forms such as television or radio. Rather, when considering the interactivity of social media, *Escape* might be thought of as flight to a different form of sociality than what is alternatively available, and is therefore consistent with the use of social media for communication.

As for Privacy Behaviors, the use of *Social Curation* ($r_s^2=.745$), a privacy strategy of culling—deleting tags and wall posts, filtering news feeds—of the relatively public forms of communication that social media enable, is the largest contributor. This conceptually makes sense: if the medium is already being deployed for social interaction, then socially-derived mechanisms for privacy production would be an obvious alternative. When considered with the variables of *Communication* and *Escape*, this second dimension demonstrates an attention to the multiple audiences and contexts that are present, and can be characterized as an “audience aware” approach to social media privacy.

Finally, Function 3 ($R_c^2=.056$) reveals that the use of social media as *Habit* ($r_s^2=.320$, $r_s=-.57$) is negatively associated with the use of *Systemic Controls* ($r_s^2=.488$), or the application-level actions such as privacy settings, blocking unwanted contacts, and restricting the viewability of posts. Studies of media use in other formats have indicated that a lack of attention, lack of awareness, and lack of intentionality are all dimensions of habitual media use (LaRose, 2010). In addition, the theory of media attendance suggests that the automatic nature of some

media use dulls attention to reasons behind its use (LaRose & Eastin, 2004). It is perhaps unsurprising then, that social media use arising from *Habit* is negatively related to reliance on *Systemic Controls* which requires attentiveness and intentionality to be effective.

A review of the communality coefficients reinforces that certain uses of social media are related to specific types of privacy activities. Social media uses of *Habit* ($h^2 = .825$), *Professional Use* ($h^2 = .706$), and *Communication* ($h^2 = .644$) have specific associations with privacy behaviors of *Systemic Controls* ($h^2 = .902$), *Social Curation* ($h^2 = .893$), and *Stealth Measures* ($h^2 = .812$).

RQ3: How do privacy concerns relate to privacy behaviors?

Finally, to address RQ3, canonical correlation analysis was used to examine the relationship between privacy concern and privacy behaviors to provide deeper insight to continued detection of the privacy paradox. The analysis yielded four functions with squared canonical correlations (R_c^2) of .16, .07, .03, and .01 for each successive function. Collectively, the full model across all functions was statistically significant (Wilks's $\lambda = .752$, $F(16, 1054.63) = 6.43$, $p < .001$), and the set of four canonical functions had an $r^2 = .248$. Functions 2 to 4 and 3 to 4 were also statistically significant, $F(9, 842.22) = 4.23$, $p < .001$, and $F(4, 694) = 3.49$, $p = .008$, respectively. Function 4 did not explain a statistically significant amount of shared variance, $F(1, 348) = 1.90$, $p = .169$. Given the size of these effects, only the first two functions are interpreted, as they represent 22.8% of shared variance, 16.2% and 6.5% respectively. Table 6 summarizes these two functions.

Table 6 - Canonical Solution for Privacy Concerns and Privacy Behaviors

Variable	Function 1				Function 2			$h^2(\%)$
	Coef	r_s	$r_s^2(\%)$		Coef	r_s	$r_s^2(\%)$	
Privacy Behaviors	Basic Security	0.290	0.712	50.6%	-0.965	-0.395	15.6%	66.2%
	Social Curation	0.217	0.613	37.6%	0.151	0.081	0.7%	38.2%
	Stealth Measures	0.025	0.459	21.0%	0.969	0.607	36.8%	57.9%
	Systemic Controls	0.688	0.943	88.9%	0.159	0.118	1.4%	90.3%
R_c^2				16.2%			6.9%	
Privacy Concerns	Information Control	-0.265	0.599	35.9%	0.507	0.212	4.5%	40.4%
	Future Life of Information	0.539	0.752	56.5%	0.309	0.396	15.7%	72.2%
	Power Loss	0.210	0.654	42.7%	0.699	0.498	24.8%	67.6%
	Identity Loss	0.747	0.825	68.1%	-1.203	-0.351	12.3%	80.4%

See notes for Table 4.

Function 1 demonstrates that while all four Privacy Concern variables contribute to the canonical variate, *Identity Loss* ($r_s^2=.681$) and the *Future Life of Information* ($r_s^2=.565$) share the largest roles. The negative canonical coefficient of *Information Control* suggests that it may be a suppressor, which is confirmed by commonality analysis. On the other side of the function, *Systemic Controls* is the primary contributor to the Privacy Behaviors canonical variate ($r_s^2=.889$); *Basic Security* and *Social Curation*, share considerably lesser contributions ($r_s^2=.506$ and $r_s^2=.376$, respectively). This dimension is notable because it encompasses the two largest privacy concerns about social media use and therefore illuminates how privacy concerns are mitigated in everyday practice. Concern for *Identity Loss* and *Future Life of Information* are dealt with pragmatically and concretely at the application-level, primarily through the engagement of privacy controls, restricting the availability of profile information, and blocking unwanted contacts.

Function 2 suggests concern for *Power Loss* ($r_s^2=.248$) correlates with the use of *Stealth Measures* ($r_s^2=.368$). Information provided through social media can easily be harvested by tracking and surveillance technologies, and its misuse can result in asymmetrical power relationships, especially with those in authority such as police and employers. This function highlights that the use of encryption, proxy servers and privacy plug-ins are ways in which individuals address concerns for authoritarian “misuse” of information. It should be noted that this

dimension of social media privacy relates to surveillance by those in authoritarian power, and is distinct from social surveillance (Joinson, 2008) or the social monitoring of others.

Communality coefficient review demonstrates that concerns related to privacy do relate to specific behaviors. Specifically, concerns about *Identity Loss* ($h^2=.804$), the *Future Life of Information* ($h^2=.731$), and *Power Loss* ($h^2=.670$) are addressed through the use of *System Controls* ($h^2 = .914$), and to a lesser extent, *Basic Security* ($h^2 = .665$) and *Stealth Measures* ($h^2 = .540$).

Discussion

As a user-centered approach, the uses and gratifications perspective provides insight to not only understand social media use, but also how social media use is influenced by privacy concerns and how its use may influence everyday privacy activities. This study specifically identified nine uses and gratifications for social media platforms: *Affect*, *Companionship*, *Voyeur*, *Information Sharing*, *Habit*, *Entertainment*, *Communication*, *Professional Use*, and *Escape*. It extends prior work on media use by identifying *Habit* as a gratification sought (LaRose, 2010) and reinforces that, like other media forms, social media are actively employed to satisfy multiple and simultaneous needs. The breadth and diversity of the identified uses and gratifications underscores the complexity associated with social media use, but such detail provides insight into how such use might intersect with specific aspects of privacy regulation.

Concerns about privacy center on four areas. Previous research identified privacy concerns as being both social and institutional (Raynes-Goldie, 2010) and related to informational disclosure on social network sites (Young & Quan-Haase, 2009). As the two primary areas for privacy concern, *Information Control* corresponds to the social aspects of informational disclosure, while *Power Loss* relates authoritarian and institutional dimensions. *Identity Loss* and

Future Life of Information have also been recognized in prior work, as “perceived damage” and “perceived likelihood” of harm, antecedents to concern about privacy (Dinev & Hart, 2006; Krasnova, Kolesnikova, & Günther, 2009). Importantly, this study identified the primacy of *Identity Loss* and *Future Life of Information* as ordered privacy concerns.

This study also demonstrated that privacy activities follow a logical pattern that mirror hierarchical levels of online activity: *Basic Security* are employed at the core level of internet access; *Systemic Controls* operate at the application level, within social media platforms themselves; *Social Curation* relate to the social interaction that occur within communication processes and activities; and *Stealth Measures* relate to more sophisticated internet protocols and technologies. Users may range in their privacy behaviors, but this work also provides evidence that users safeguard their privacy simultaneously at multiple levels.

The first research question interrogated the relationship between privacy concerns and the uses of social media and a small but significant relationship was identified. Previous research established that privacy concerns relate directly to disclosure practices on social media sites (Young & Quan-Haase, 2009) as well as the use of certain social media site features (Smock, Ellison, Lampe, & Wohn, 2011). This study, by more explicitly identifying a range of privacy concern dimensions, highlights that concerns related to *Identity Loss* and the *Future Life of Information* are most strongly associated with using social media to find out about others (*Voyeur*), and secondarily *Habit*. Though effect sizes are low ($R_c^2=15.6\%$ for the two interpreted functions), this study establishes a tangible link between *specific* privacy concerns and explicit uses of social media. It is of note that these uses are somewhat functional in nature, contrasting sharply with more intimate, identity-related uses such as sharing information (*Information Sharing*) and expressing emotion (*Affect*). This suggests that concerns about the use of identity information and

how content will be treated in the future may lead to more instrumental forms of engagement with social media platforms. Because these results appear to contrast sharply with the economic goals of many social media platforms, this finding may be of interest to diminish additional barriers to increased user engagement.

A much stronger association between the uses and gratifications of social media and privacy activities was demonstrated in response to RQ2. Three approaches to social media privacy were identified, the first of which connected *Professional Use* of social media and the deployment of *Stealth Measures*. Individuals carefully construct professional identity through their social media use (Gilpin, 2010; van Dijck, 2013) and impressions are often co-constructed through friend connections and the postings made by others (Walther, Van Der Heide, Hamel, & Shulman, 2009). This makes the construction of professional identity on social media especially challenging and complex. This dimension provides evidence that users perceive that advanced privacy approaches are required to use social media for professional purposes, and suggests an opportunity for future research.

A second dimension of social media privacy is found in the use of *Social Curation* when social media is used for *Communication* or *Escape*. Relationship development from the superficial to more intimate forms is often described as a process of self-disclosure in which the tension of privacy control and the hospitality of the social context feature predominantly (Werner, Altman, & Brown, 1992). Social penetration theory (Altman & Taylor, 1983) and communication privacy management theory (Petronio, 2002) underscore the relevance of socially-oriented approaches to privacy that center on disclosure in unmediated relationships. These results extend this work to mediated environments, demonstrating that similar types of boundary control processes are exercised on social media platforms and reinforcing the significance of social strategies in privacy

regulation processes.

A third dimension of social media privacy identified in this study offers evidence of how the privacy paradox may continue to surface. *Habit* is related to a lack of engagement of application-level privacy management tools. This is consistent with how habitual media use is characterized generally, lacking intentionality and/or attention to the medium/message (LaRose, 2010). These results suggest that habituation intersects with privacy management in ways that introduce the potential for disconnection between privacy concerns and privacy behaviors. In turn, this prompts a continued manifestation of the privacy paradox, despite increased experience and sophistication in social media use. Future studies might further explore how the automatic nature of habitual social media use may serve to influence other forms interactivity, both with platforms themselves as well as mediated interaction with others.

Finally, examining the linkages between privacy concerns and privacy behaviors provides insight into how privacy is tangibly negotiated in the everyday. Concerns about *Information Control* and *Future Life of Information* are addressed through the engagement of application-level controls. Similarly, sophisticated measures, such as encryption and privacy plug-ins, are used in response to concerns about power and identity loss. These connections provide additional insight into how privacy is actively negotiated and accomplished on social media platforms, and how action responds from specific privacy concerns.

It is important to note that while the participants in this study were sampled from an ethnically and racially diverse undergraduate student population, the voluntary nature of student research recruitment precludes generalizability. As is often the case with surveys, reliance on self-reported data presents the potential for reporting bias. The results are salient for social media researchers and site designers alike however, as they provide a more detailed view of how privacy

is viewed and accomplished.

Conclusion

In summary, this study utilizes a uses and gratifications perspective to investigate how privacy concerns and privacy behaviors intersect with underlying social media uses. Specific uses correlate to both identifiable concerns about privacy and express privacy behaviors. In addition, certain privacy concerns are associated with explicit privacy activities. These findings enhance our understanding of the multiple facets of privacy regulation that are employed in everyday use of these media and provide nuance to the understanding of the dynamic of privacy and sociality.

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