Online Social Network Groups: Effects on Content-Sharing and Usability

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ABSTRACT

Online social networks are an essential tool for communicating with friends, family, colleagues, and various other networks. Many social networks have implemented a grouping mechanism as a means to combat unintentional information sharing across a user's different "social spheres." The problem explored by this project is to determine the effectiveness of these grouping mechanisms on different social networks and the extent to which users utilize this functionality. We show that current solutions for organizing connections are not utilized by the majority of users. The reason for this is twofold: maintaining user groups is a tedious and time-consuming process, and many users do not care who sees their personal updates.

1. INTRODUCTION

Online social networks (OSNs) have quickly become an essential tool for communicating with friends, family, colleagues, and various other networks. One of the most interesting (and popular) aspects of these networks is that they allow users to post content to members of their networks. Collectively, this user-provided content contributes to a source of information that is constantly updated and influenced by user-sentiment.

As the popularity and user-base of these networks continues to increase, users are finding new and innovative ways to integrate social networking into their everyday lives. People are using social networks for a wide variety of reasons, including entertainment, business, news, school, etc. Developing countries sometimes use social networks as an educational tool to learn English and to rapidly share information during emergency situations. That said, status updates can vary in content from being a joke to being a plea for help during an emergency.

Given the nature of data shared within a social network, the issues surrounding data privacy have come to the forefront. The proliferation of social networks as gradually led to the overlap of previously unrelated aspects of a person's life. That is, the use of an online social network provides visibility of communications across unrelated social spheres. Many social networks have implemented a grouping mechanism as a means to combat unintentional information sharing across a user's different "social spheres." The idea behind these groups is to allow users to categorize contacts and easily share specific content with specific groups.

The problem explored by this project is to determine the effectiveness of contact groups on different social networks and the extent to which users utilize this functionality. In addition, we will attempt to come to a deeper understanding of the types of information that users share with specific groups. Perhaps users utilize specific social networks for different types of content sharing?

The social networks that were analyzed for the purposes of this study are Facebook, Google+, and Twitter. Each of these social network sites provides a different way for users to organize their contacts. Twitter provides a comparatively limited grouping option – Twitter users can place their "followees" into lists in order to more easily filter tweets. However, Twitter provides no option to selectively share tweets with select users. Rather, all of a user's followers have the ability to read his or her tweets. Facebook and Google+ provide much finer-grained customization options in which contacts can be grouped into lists (or "circles" in the Google+ case).

2. BACKGROUND

In this section, we provide background information regarding the social grouping mechanisms implemented by Facebook, Google+, and Twitter.

2.1 Facebook Friend Lists

Facebook allows users to manage their friends through the use of "friend lists." The idea behind a friend list is that users can create a list, add a subset

of their friends to it, and then use the list to simplify content sharing. Friend lists can be accessed throughout Facebook and are integrated into the News Feed and Status Publisher. Also, a user can add a friend to a friend list directly from that friend's profile page. Figure A shows the user interface for managing a friend list, and Figure B shows the user interface for managing content-sharing.

Figure A: Managing a Friend List on Facebook

Figure B: Managing Content-Sharing on Facebook

2.2 Google+ Circles

Google+ uses the concept of "Circles" to allow users to manage their friends. Circles are designed to help users organize connections according to real-life social connections (e.g. "friends," "work," etc). Similar to Facebook's friend lists, the idea behind a circle is that users create a circle, add a subset of their connections to it, and then use the circle to simplify content sharing. Figure C shows the user interface for managing a circle, and Figure D shows the user interface for managing content-sharing.

By default, Google+ provides four circles: "friends", "family", "acquaintances" and "following". Users can add any of their connections to a circle via a simple "drag and drop" action. Users can share content with a subset of their circles, all their circles, their extended circles (people in *all* circles and *all* people in the circles of her circles) and with the public (everyone).

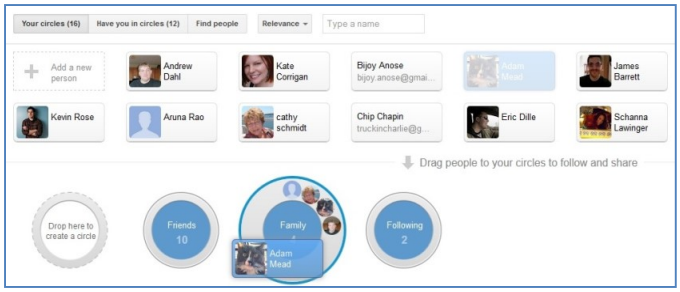

Figure C: Managing a Circle on Google+

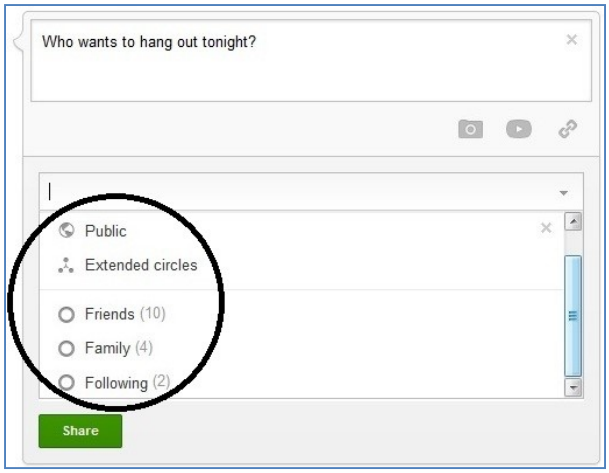

Figure D: Managing Content-Sharing on Google+

2.3 Twitter Lists

The implementation of connection grouping is much simpler in Twitter than in Google+ and Facebook. Twitter lists are simply a set of user-selected Twitter users with no means to directly target specific content to specific lists. Twitter lists are primarily used to organize which tweets a user sees.

Twitter lists provide a way for users to view tweets from a select group of users. That is, when a user clicks on a list, they see a stream of tweets that is only from users that are included in that group. In addition, users may opt to follow specific lists instead of specific users and may follow another person's list without directly following that person.

Figures E and F shows the user interface for managing a list.

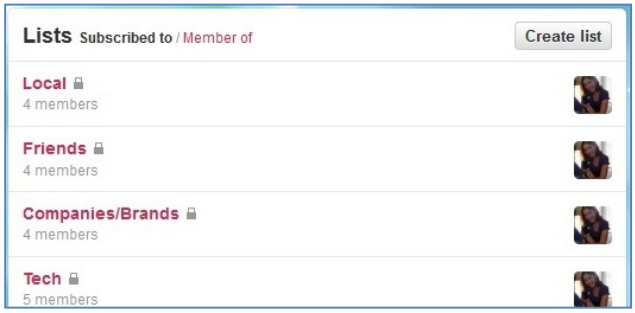

Figure E: Viewing Twitter Lists

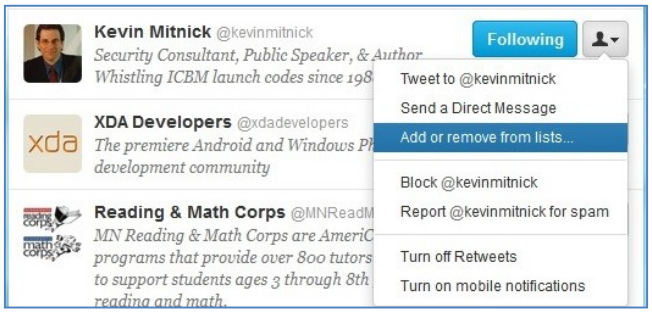

Figure F: Managing a List on Twitter

3. RELATED RESEARCH

To our knowledge, no extensive work has been done to analyze the effect of contact groupings on content sharing and distribution within an online social network. However, for the purposes of this study, we have identified several studies of social network usage and the consequences of communication visibility across social spheres. A particularly interesting paper [1] investigates peoples' rationales for grouping their contacts. The authors identify six criteria that are commonly considered when grouping contacts and also investigate whether automated grouping is a viable approach to privacy management. They found that automating the grouping process is difficult because different people considered different grouping criteria to varying degrees.

A second study [2] examines the consequences of visibility of communications across social spheres. The authors performed a survey among Facebook users and found that the diversity of a user's Facebook network may create tension. Interestingly, the results of this study show that the number of kin in a Facebook network is a crucial component in predicting online tension. The number of work and social contacts did not have an effect in predicting tension.

A third study [3] explores key issues that people experience when trying to manage personal boundaries within (and across) social networks. The authors focus their work on email and online social networks and use a survey to examine how people facet their identities and express these identities through the use of email and Facebook. As it turned out, family was found to be an important context for sharing online. And, interestingly, a higher level of "facet incompatibility" correlated with increased worry about content sharing in the context of social networks.

4. APPROACH

The reason that Google+, Facebook, and Twitter were used for this project is because they are widely used and have a large user base. Data was collected through two methods. The first approach of data collection was through an extensive online survey that was designed to study the usage of groups in social networks. Secondly, a face-to-face group interview session was conducted to gather additional data that is outside the confines of the prepared survey.

The online survey was conducted within a three-week period. The development of specific questions were based on the research questions at hand. Our initial set of questions were geared towards the participants general usages of social networks. Questions such as, "Why do you use social networking websites?" and "Please rank the following grouping motivations according to importance." while providing the user with six choices ranging from "to avoid targeted advertisements" to "maintain separation between coworkers, family, friends, etc." Then users were asked questions about specific social networks usages of Facebook, Google+, and Twitter. Participants were also asked to write in answers to open-ended questions. Questions such as, "What type of content do you wish others would not post as their status?" Each question was motivated either by their usages of social networks, their motivations, or with respect to the social network user interface. The online survey collected 136 started surveys and 86 completed respondents.

The second method of collecting user data was through one face-to-face group session interview. A total of 8 participants in the group interview were coworkers of both the authors of this paper. The demographic of these participants ranged from 21 to 32, 4 of whom were active Google+ users, and 2 Twitter users. During the initial 10 minutes of the interview, each participant was asked to complete the online

survey as we observed him or her. After everyone had completed their online survey, we asked the group questions regarding their OSN usages and each user interface. In the interviews, each question was designed with the user actions in consideration. We asked the users questions such as, "show me how you would filter a status update to certain groups/circles" and "show me how you would add users to a new access list or circle." Their actions and dialog was documented.

Given the breadth of this data collection, there are many ways in which it can be categorized. We will begin by providing an analysis of social network distribution among participants. In addition, we will analyze the extent to which contact groups are maintained within each social network. For those who maintain contact groups, we analyze the types and topics of content that are selectively shared.

Further analysis is performed using the responses regarding the various user interfaces. What do users perceive as positives aspects of the interface(s)? Negative aspects? Do users seem to prefer one social network over another, and why? For this analysis, we are especially interested in determining whether the user interface has an effect on whether a user chooses to selectively share content with a specific contact group.

4.1 Surveys

Survey participants were asked some basic demographic information as well as to share information about whether they maintain user lists (and why). In addition, participants were asked to share specific instances in which they modified their default privacy-settings when sharing content. What was the content and which access list did they block from seeing it? Participants were also asked to comment on their experiences using access lists and the effectiveness of the user interface. For those who have accounts on multiple social network sites, we asked them to compare and contrast their experiences in creating user lists.

The survey was conducted over a three-week period. Throughout the duration of the survey, we actively monitored progress and verified the validity and quality of the data.

4.2 Interviews

Interviews were conducted in a group setting where one all participants sat around a table. Each participant had a laptop. Most participants brought their own laptops, but a small number of participants were given laptops to borrow. Two researchers were present – one led the interview and the second took notes and observed the participants.

The interview itself consisted of participants taking the online survey while one researcher led them through the questions. Participants discussed each of the questions and provided their own insight.

Participants were selected for interviews based on preliminary survey results. In particular, we were interested in interviewing individuals who frequently use different forms of social media in order to further understand what motivates them to share certain data with certain groups.

4.3 Participants

Participants were recruited by advertisements on Facebook, Twitter, and word-of-mouth. The survey was completed by 86 people, and almost half (44.2%) were male. We did not target a specific demographic, but the average age of the participants was 28. We believe this is due to our advertising methodology. However, the primarily younger demographic provides a more diverse perspective that is representative of typical social networking system users. In particular, a 2008 study by the Educause Center for Applied Research showed that over 85% of college students used one or more social networking sites [4].

5. RESULTS

In this section, we report on the results received from the online survey and group interviews.

5.1 Social Network Usage

Of the participants, 44.1% reported having a Google+ account, 100% reported having a Facebook account, and 29.1% reported having a Twitter account. Almost half (44.2%) of the participants reported having over 300 friends on Facebook. Of the participants with a Google+ account, 78% reported having fewer than 25 friends. Those with Twitter accounts reported an average of 50 followers.

Participants reported that they updated their social networks anywhere from never to every day. Table 1 shows the reported frequency with which participants update their status messages for each social network.

	Facebook	Google+	Twitter
Never	3.4%	58.5%	28.0%
Rarely	31.5%	31.7%	36.0%

A few times per month	33.7%	7.3%	16.0%
A few times per week	18.0%	2.4%	12.0%
Every day	13.5%	0.0%	8.0%

Table 1: Update Frequency

5.2 Connection Grouping

In this section, we report on the extent to which users utilize contact grouping mechanisms on Google+, Twitter, and Facebook. Across all networks, participants reported that their connections consisted primarily of friends, family, and coworkers. A significant number of Facebook users (85%) reported that they are connected to acquaintances via Facebook. Twitter users were much more likely to follow strangers, politicians, celebrities, and companies or brands.

Google+

Participants who use Google+ reported that their Google+ connections consisted of primarily of friends, family, and coworkers. Of the participants reporting that they had a Google+ account, 43.6% reported having between 1 and 3 circles. 25% of respondents reported having 0 circles, and 25% of respondents reported having between 4 and 6 circles.

Participants reported that their circles did not closely represent real-life relationships. In addition, about half of the users (48.7%) reported that they never updated their circles, and 43.6% reported that they "rarely" updated their circles. Half (50.8%) of the respondents reported that they were not concerned with keeping their posts separated according to circles.

Facebook

Of the participants reporting that they had a Facebook account, 41.9% reported having 0 friend lists and 39.5 participants reported having between 1 and 3 friend lists. 11.6% of respondents reported having between 4 and 6 friend lists, 4.7% reported having between 7 and 9 friend lists, and 2.3% reported having 10 or more friend lists.

Almost half (46.5%) of participants reported that their friend lists did not closely represent real-life relationships. In addition, about half of the users (53.5%) reported that they never updated their friend lists, and 41.9% reported that they "rarely" updated their friend lists. Over half (61.6%) of the respondents reported that they were not concerned with keeping their posts separated according to friend lists.

Twitter

Of the participants reporting that they had a Twitter account, 94.9% reported having 0 lists and 4.2% of participants reported having between 1 and 3 lists.

Well over half (77.8%) of participants reported that their lists did not closely represent real-life relationships. In addition, about half of the users (48.7%) reported that they never updated their lists. Over half (64%) of the respondents reported that if they had the ability to target tweets to specific lists, they would not utilize it.

5.3 Selective Sharing

In this section, we report on the extent to which users selectively share information on Google+, Twitter, and Facebook. Opinions were reported on a 5-point Likert scale with 1 being "Very Concerned" and 5 being "Not Concerned At All. Across all networks, the majority of users were relatively unconcerned with who could see their status updates (Figure G):

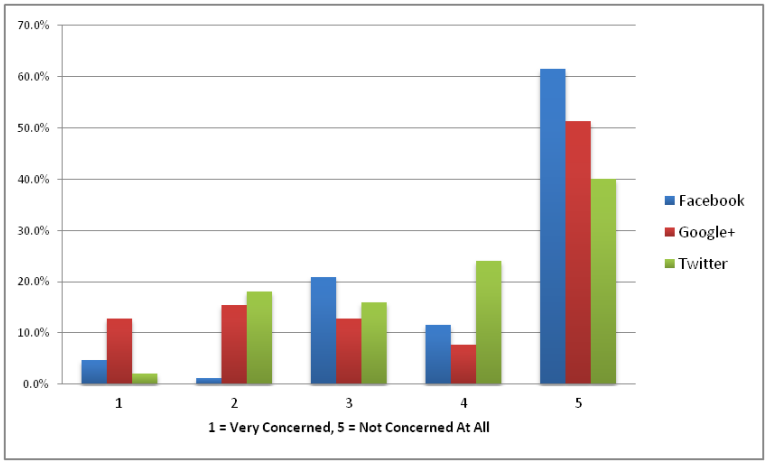

Figure G: User Concern Over Status Update Visibility

Looking at the type of content shared according to social network (Table 2), we found that there is a similar distribution across topics. This set of topics was initially identified by Morris, et al [5] and subsequently tailored to our particular survey. Twitter users posted more about technology and restaurants than on any other social network, but Facebook users posted more personal thoughts, status updates, and travel updates. A large number of Google+ participants (39%) reported "Other" as a topic. However, when prompted to give an example of "Other," many participants said that they do not post to Google+.

	Facebook	Google+	Twitter

Thoughts	62.9%	31.7%	60.0%
Status	65.2%	24.4%	40.0%
Technology	14.6%	19.5%	28.0%
Entertainment	44.9%	9.8%	32.0%
Professional	19.1%	14.6%	20.0%
Places	28.1%	7.3%	12.0%
Restaurants	13.5%	9.8%	28.0%
Current Events	34.8%	14.6%	24.0%
Shopping	10.1%	0.0%	16.0%
Politics	16.9%	9.8%	16.0%
Religion	14.6%	0.0%	16.0%
Health	18.0%	2.4%	8.0%
Finance	3.4%	0.0%	4.0%
Travel	36.0%	4.9%	8.0%
Home/Family	11.2%	4.9%	12.0%
Style	27.0%	0.0%	24.0%
Games	13.5%	7.3%	16.0%
Hobbies	30.3%	12.2%	28.0%
Other	9.0%	39.0%	24.0%

Table 2: Content Posting by Topic

Participants were asked to discuss the type of content that they typically post to their OSNs. We received candid responses, including examples of what participants believe should be left off of OSNs completely. Below is a sampling of the responses:

I tend not to selectively share between groups. Rather, I share will all groups but am very selective about what I share.

I like to share updates in my life with family and friends. Things such as a new job, going back to school, etc. I also like to share pictures, it's always nice to see familiar faces even when they are so far away.

Some photos I share only with select groups because I don't want certain people to see certain pictures. For example family friends or people from church seeing New Year's pictures.

Some people share to much about their personal lives. Such as personal problems at home or within a small group of friends. Some things don't belong on a social network.

Alternatively, we wanted to determine if there was any user content that users wished their friends had *not* shared. To accomplish this, we asked users to identify an instance in which one of their contacts posted information that they would have preferred not to see. A wide range of responses was received, but the most common responses indicated that the information was either "too personal" or "very annoying."

These responses provided insight as to how the perception of a user is impacted according to that user's content-sharing habits. In addition, users may inadvertently post status updates in a fashion which they themselves would feel uncomfortable reading. The following are examples of some responses:

Because I don't understand why they felt the need to share it on facebook since it's something more personal than I would ever put on the internet.

Some individuals make certain opinions known without remembering to look at it from others' perspectives first (we are human, however).

Photos of me that I didn't know were taken and then i was tagged in them.

Google+

Of the survey respondents who use Google+, half (51.3%) reported that they were "not concerned at all" with keeping their posts separated according to circles and that they never censored their posts. In addition, 56.4% of participants reported that they do not selectively share posts with specific circles.

Despite the large percentage of respondents who indicated that they do not selectively share posts with specific circles, we found that 43.6% of respondents indicated that *they never share content with all of their circles*. However, it remains unclear as to why they never share content with all of their circles. One possibility is that they selectively choose which circles can view their content. A second possibility is that these users seldom post content (and hence do not share content with all of their circles). Table 3 shows the complete set of survey results regarding user sentiment toward a set of statements that describe content sharing habits on Google+.

Statement	Never	Rarely	Usually	Always
I censor my posts	51.3	15.4	20.5	12.8
I selectively share posts with specific circles	56.4	15.4	17.9	10.3
I share posts with all of my circles	43.6	23.1	20.5	12.8

It is important to keep my posts separate according to circles	48.7	20.5	17.9	12.8
I avoid posting information when I must selectively share it with a circle(s)	56.4	25.6	10.3	7.7

Table 3: Google+ Users' Posting Habits (Percentages)

Facebook

Participants who use Facebook reported that their Facebook connections consisted of primarily of friends, family, coworkers, and acquaintances. Over half of the respondents (61.6%) reported that they were "not concerned at all" with keeping their posts separated according to friend lists. But, interestingly, over 60% of participants reported that they usually or always censor their posts. In addition, 59.3% of participants reported that they never selectively share posts with specific friend lists.

Unlike Google+, a very small percentage of Facebook users (3.5%) indicated that *they never share content with all of their friends*. Table 4 shows the complete set of survey results regarding user sentiment toward a set of statements that describe content sharing habits on Facebook.

Statement	Never	Rarely	Usually
I censor my posts	15.1	20.9	31.4
I selectively share posts with specific friend lists	59.3	18.6	17.4
I share posts with all of my friend lists	3.5	10.6	27.1
It is important to keep my posts separate according to friend lists	60.7	23.8	11.9
I avoid posting information when I must selectively share it with a friend list(s)	38.8	12.9	25.9

Table 4: Facebook Users' Posting Habits (Percentages)

Twitter

Participants who use Twitter reported that their connections consisted of primarily of friends, family, celebrities, and companies/brands. Under half of the respondents (40%) reported that they were "not concerned at all" with censoring their posts. In addition, 56% of participants reported that they share information via Twitter that they would not share on their other social networks.

5.4 User Interfaces

In this section, we report on the feedback received regarding the user interface of grouping mechanisms on Google+, Twitter, and Facebook. Particular attention was paid to usability between Google+ and Facebook because these networks strive to provide similar functionality but through different interfaces.

For each network, users were asked the extent to which they found grouping mechanisms useful. In addition, we asked users to rate the ease of use of some common grouping functionality. In almost all cases, users deemed Google+ circles as easier to use than Facebook Friend Lists (Table 5). Also, the majority of respondents reported that they did not find grouping mechanisms useful (as seen in Figure ?).

		Organizing connections	Adding users to group	Removing users from group	Viewing members of a group	Viewing posts from specific connections	Sharing specific posts with groups
Extremely Easy	Google+	48.7	59	43.6	34.2	30.8	30.8
	Facebook	15.1	29.1	16.3	23.3	34.1	19
Somewhat Easy	Google+	20.5	15.4	23.1	36.8	30.8	30.8
	Facebook	19.8	20.9	22.1	25.6	22.4	22.6
Neutral	Google+	20.5	20.5	25.6	21.1	30.8	28.2
	Facebook	44.2	38.4	41.9	39.5	29.4	46.4
Somewhat Difficult	Google+	10.3	5.1	7.7	5.3	7.7	10.3
	Facebook	19.8	10.5	17.4	8.1	10.6	10.7
Extremely Difficult	Google+	0	0	0	2.6	0	0
	Facebook	1.2	1.2	2.3	3.5	3.5	1.2

Table 5: Interface Ease of Use (Percentages)

Google+

Participants' feedback was mixed when asked to rate the ease with which circles can be managed and organized. During the interviews, some participants praised the drag-and-drop interface and described it with words like "simple," "clean," "intuitive", and "not cluttered." The following are quotes from each side of the spectrum:

User A: *I like the Google+ interface more because of the cleanliness and ease of use, as well as the added functionality that Facebook does not carry.*

User B: *Google represents an utter failure in user experience. Only a developer could love.*

Users indicated that their biggest gripe with Google+ circles is that it can be somewhat confusing to view posts from a specific circle or to share content with a specific circle. When users were asked if they ever avoided posting something because it would require specifying a circle, 10.3% stated that they usually would, and 7.7% stated that they always would.

Facebook

Participants' were less optimistic when asked to rate the ease with which Friend Lists can be managed and organized. The majority of survey participants were neutral when asked about the difficulty of performing various tasks with lists. One noticeable finding is that, while Google+ users found it difficult to view posts from a specific circle, 34% of Facebook users found this task to be "Extremely easy."

During the interviews, some participants had difficulty even finding their Friend Lists within Facebook. The following exchange during the interview session highlights some of the difficulty users experienced:

User A: *How do I see my Friend Lists?*

User B: *You have to click on "Friends."*

User A: *I did! I just see my friends, no lists.*

User B: *Click on "Friends" and there you be a list of your Friend Lists.*

User A: <Clicks around for a bit> *Ok, I'm just seeing all of my friends, no lists.*

User B: <Goes over to User A's laptop> *Oh! No, ok you have to do it from your home screen, not your profile.*

Users indicated that their biggest gripe with Facebook Friend Lists is that it can be confusing to view list membership and also to add or remove friends from lists. When users were asked if they ever avoided posting something because it would require specifying a circle, 25.9% stated that they usually would, and 22.4% stated that they always would. This rate is higher than the rates reported by Google+ users, but not significantly.

Twitter

Because Twitter Lists are designed to provide different functionality than Circles or Friend Lists, our approach to examining the Twitter interface was slightly different. Twitter users were asked to indicate the extent to which they would benefit if Twitter provided the ability to target tweets to selected followers.

The majority of respondents who use Twitter (64%) indicated that they would receive no benefit. The remaining users indicated that they would benefit, with 8% of users indicating that they would use this feature very often. In addition, 20% of respondents indicated that their Twitter usage would increase with the addition of this feature.

6. DISCUSSION

The results of our survey and interviews indicate that current solutions for organizing connections are not utilized by the majority of users. Why? One possibility is that maintaining user groups is a tedious and time-consuming process. A second possibility is that users do not care who sees their personal updates. However, some users indicated that they would sooner avoid posting an update than try to selectively share it with certain groups. This indicates that, to some users, maintaining and selecting user groups is a substantial effort.

Facebook has recently taken steps to simplify the organization of Friend Lists with the development of "Smart Lists." Smart Lists are a type of Friend List that is created automatically according to a user's city, workplace, family and school. Smart Lists are automatically updated according to information that users have in common with other friends. As evidenced in the interviews and surveys, however, there still seems to be some discontent with Facebook's friend list user interface.

Because Google+ is a relatively new online social network, it is difficult to measure the effectiveness of circles. However, it is evident in our research that, despite the fact that approximately 50% of our respondents reported using Google+, the frequency of use is minimal. The reactions to the Google+ interface show definite potential for addressing privacy concerns within online social networks. Our results indicate that users find the Google+ interface easier to use when it comes to managing groups. We hypothesize that this is a result of the clean and relatively simple user interface.

In terms of the type of information that users share with specific groups, we found that more than 60% of users post personal photographs and information in status updates visible to their entire network. Our findings indicate that many people react negatively when their friends post content that is too personal to their friends' lives. In addition, people expressed anger and disapproval when describing instances in which their friends posted information about their own lives (e.g. embarrassing pictures). Oftentimes

users post such information and unknowingly broadcast it to not only their network, but their friends' networks also. As more schools, employers, and other entities embrace social networks, increasing importance is being placed on the separation of social network boundaries.

As users continue to share information across multiple online social networks, content-type may begin to play a bigger role in which networks users gravitate toward. Currently, users tend to prefer Twitter when discussing current events, technology, and other impersonal subject matter. Likewise, many users prefer Facebook as a means to interact with close family and friends.

7. FUTURE WORK

For each network in our study, users were asked to describe the extent to which they found grouping mechanisms useful. The majority of respondents reported that they were not useful. In the future, it would be interesting to explore users' reasoning. Does the user interface prevent users from easily benefiting from grouping mechanisms?

8. CONCLUSION

Online social networks (OSNs) have quickly become an essential tool for communicating with friends, family, colleagues, and various other networks. Many social networks have implemented a grouping mechanism as a means to combat unintentional information sharing across a user's different "social spheres." The problem explored by this project was to determine the effectiveness of contact groups on different social networks and the extent to which users utilize this functionality. We show that current solutions for organizing connections are not utilized by the majority of users. The reason for this is twofold: maintaining user groups is a tedious and time-consuming process, and many users do not care who sees their personal updates.

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