The Social Sharing Grid: A Theory-Driven Framework for Technology Mediated Health Behavior Support

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Abstract

Many personal informatics systems include methods for sharing data with others in order to garner social support. However, there are few guidelines for ensuring that data sharing actually results in appropriate supports. Using behavioral sciences theory as a guideline, we present a framework for optimizing data sharing techniques depending on the reach (e.g., to one person, a small group, or the world) and content (e.g., sharing an experience, support, or information). We outline a new strategy for categorizing sharing technologies, identifying key techniques for optimizing systems that foster social support via social media.

Keywords

Social Support, Social Media, Sharing Technologies

ACM Classification Keywords

J.3 Life and Medical Sciences; J.4 Social & Behavioral Sciences; D.2.10 Design;

General Terms

Design, Human Factors

Introduction

Chronic diseases contribute to 75% of healthcare costs and seven in ten deaths in the United States [1], yet many chronic diseases are preventable with careful attention to behaviors including healthful eating and physical activity [2]. Previous research consistently

Social Sharing Grid

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This grid describes 9 types of sharing through social technology. The purpose is to help people (ourselves included) think more clearly about types of sharing, motivations for sharing, and gaps in sharing.

	Content		
Reach	Experience(s)	Support	Information
Whisper 1 to 1 interaction (e.g., texting)	Whisper-Experience	Whisper-Support	Whisper-Information
Huddle Discussing with circles of family, friends, or colleagues with same interest (e.g., email)	Huddle-Experience	Huddle-Support	Huddle-Information
Shout Broadcasting to the world (e.g., Twitter post)	Shout-Experience	Shout-Support	Shout-Information

Was this useful? Suggestions? @frankc @ehekler

Silk Icons

Figure 1. The Social Sharing Grid summarizes possible interactive experiences that can happen via social media. A full image can be found at http://slidesha.re/sharegrid.

shows social support as helpful for promoting health behaviors [3]. However, it is unclear whether these benefits carry over to the domain of social media. With over 800 million Facebook users [4], much recent attention has been placed on developing new personal informatics technologies capitalizing on social media to foster social support[5]. Early reports on the effectiveness of these supports have been mixed. For example, Munson [6] highlighted the many potential advantages but also hardships in eliciting social support from social networks. Based on three studies he conducted, he identified two core problems: 1) the level of posting (e.g., to all friends on Facebook vs. a select group) and 2) the type of information provided. He identified several unintended consequences of poorly designed "share" features such as reduced interactions with friends or unhelpful (e.g., sarcastic but well intentioned, or just mean) responses from a social network. These results highlight the need for a more nuanced understanding of the best methods for posting health information "beyond the share button" [6].

Social Sharing Grid

In response, we propose the Social Sharing Grid as an organizing framework for the design of social media sharing mechanisms (Figure 1). The two main domains that impact the social interaction are reach and content. We propose three levels of reach:

- Whisper interactions (i.e., 1:1 interactions, e.g., SMS);
- Huddle interactions (i.e., interactions in small groups, e.g., Google Circles); and

- Shout interactions (i.e., interactions shared with a broad audience, e.g., all Facebook friends/Twitter).

Further, there are three broad content domains:

- Experience interactions (i.e., postings about life events such as nights out or other events);
- Support interactions (i.e., posting intended to either give or receive help); and
- Information interactions (i.e., sharing about interesting information, such as news or ideas).

By accounting for distinct levels of reach and content, designers can optimize technologically mediated interactions focused on health and wellbeing.

Although some technologies may encompass multiple domains (e.g., email appears flexible enough to function across reach and content domains), other technologies are optimized for specific domains. For example, we argue that Facebook is optimized for Shout-Experience interactions via status updates, photo sharing (and tagging), and asynchronous social games (e.g., Wordshare). Twitter and blogs are well optimized as *Shout-Information* technologies. Specifically, Twitter's focus on posting short bits of information, often including links, and its use in business, makes it well suited for transferring information across a large network. Twitter is also a good bridging tool based on social capital research suggesting interactions are often driven by either increased bonding (i.e., improving close relations) or bridging (i.e., connecting with a wide group for new interventions). SMS systems on the other hand, are well optimized as an *whisper-experience (e.g., setting up plans to meet) and information* (e.g., sharing the score of "the game"). In the following sections, we show how behavioral science theories, in consort with the social sharing grid, can

provide insight to the process of designing for technology-mediated social support.

Design Principles from Behavioral Sciences

In the behavioral sciences research literature, there are many theoretical models related to social support. We have identified the following design principles.

#1: Understand the Support a User Wants
The stress and coping perspective [7], arguably the most influential, postulates that social support influences health by acting to minimize the effects of stressful life events on health via either direct support (e.g., receiving help with walking) or merely by the perception that support is available. This thread of research emphasizes the importance of different coping mechanisms to deal with different stressors [8], with specific types of support including emotional, instrumental, informational, companionate, and esteem support [9]. Although intimate relationships tend to inspire a broader array of social support types, [9], more distal relations tend to be valuable for discovery of new information and other types of instrumental support [10]. In addition, there is a small but emerging group of technologies focused accountability as a metric of support (e.g., stickk.com). Explicit understanding of the type of support an individual desires is key to effective technology design.

#2 Design for the Perception of Support
A related model emphasizes the importance of perceptions of access to social support [11]. In this model, those individuals with a belief that the world is supportive will perceive actions of others as being supportive and thus receive social support through more channels. Interestingly, in this model, although receiving "real" social support from others is important,

it is really the perception of the actions in this model that drive if an act is social support [11]. Based on this model, the best method for eliciting social support is to increase an individual's judgment that actions of others are supportive. Key issues that should be explored from this perspective include understanding how an individual's perceptions of those providing the support impact perceptions of social support including that individual's track-record related to giving support.

#3: Beware Negative Interactions
Social support that is given in a well-intentioned but otherwise poor fashion (e.g., unsuitable, clumsy, pushy) can actually result in psychologically damaging effects [12]. This is likely part of a much larger psychological bias, whereby negative events, including interactions, tend to be more easily remembered and have a stronger impact than positive events [13]. Indeed, general advice in couples therapy is that there needs to be a ratio of 5 good interactions for every 1 bad interaction to maintain a healthful balance [14].

#4: Counteract Diffusion of Responsibility
Finally, diffusion of responsibility [15] – a classic psychological principle suggesting that, as more individuals are involved in providing support, the less likely any one person will provide the support because each will perceive that others will take the responsibility for it – is a key phenomenon that must be taken into account when designing health sharing technologies.

Application to the Social Sharing Grid

In the following section, we show how these design principles—in consort with the social sharing grid— provide insight into the design of effective mechanisms for technology-mediated social support.

Whisper-Support

Whisper systems often require much more effort from an individual to create a meaningful interaction with the receiving party. Whisper technologies are private in scope, and thus have the advantage of far greater contextual relevance and by extension greatly reduce *diffusion of responsibility*. Based on this, whisper systems should likely be optimized to foster customizability and relevance. Specifically, a key process may be to help individuals use a technology channel of interaction such as text-messaging or video-chat for continuously providing support to one another, in cases when both parties likely receive direct benefit from the interaction. However, whisper technologies will likely be poorly optimized for discovering new strategies for a given behavior.

Huddle-Support

Many current online social support groups are huddle-support sharing technologies. Successful online social support groups (e.g., the Kneeboard [5] and Crohnology.com) are based around narrow communities for individuals with a specific shared experience (knee injury and Crohn's disease). Specificity in scope may be a key to these successful online communities [16]. For Huddle-Support, a key area for future exploration is the *transparency of support* and *reciprocity* offered. Researchers of bulletin board systems offer a specific lens to more socially translucent interactions with members being able to view, reply and support others in their community [17]. Social translucence is a concept of visibility, awareness, and accountability in how participants in these online communities present themselves [17]. The key design feature in current technologies is the high level of visible reciprocity and by extension accountability that

goes into these systems. This may be a key design feature for optimizing Huddle-Support technologies. In contrast, with systems such as Google Circles or email bcc'ing a support group there is a level of opaqueness to the sharing that may hinder engagement and perceptions of being part of a group, as the support receiver within these systems may receive more benefit than others. This asymmetric interaction must be better understood within Huddle technologies in general for them to reach possible success, as there is a trade off of reciprocity and visibility, whereby some individuals may find it difficult to share some personal information to the broader group. In online communities such as Crohnology, we argue the participants of such communities feel comfortable sharing because everyone is on equal footing and thus receive the same amount of social support, but other types of support (e.g., receiving support for exercising) will need to be clearly explored with an eye on visibility and reciprocity, when designing for Huddle technologies.

Shout-Support

As suggested by others [6], we do not believe there is currently an effective Shout-Support system. A primary goal for future research in this realm is the exploration of the user experience for the support network. Based on previous work, we propose focusing on reducing the impact of diffusion of responsibility and increasing perceptions of social support among the support receiver, not necessarily actual social support. Current technologies appear to largely focus on how to optimize the user experience of those receiving social support, not the user experience of those providing the social support. Particularly for Shout-Support technologies, a clear understanding of the incentives a person has for providing support is needed, particularly

because there is likely an asymmetric relationship within these systems that is not present in whisper and huddle systems. Some key incentive structures that should be explored include (a) positive emotions from helping; (b) loss aversion, or the desire to minimize pain to another person; (c) reciprocity of support; (d) impression management, or desiring to be perceived as a good person; (e) bonding; and (f) bridging.

Conclusion

With careful attention to design, social media may be effective to foster social support. Key factors to be designed around include focusing on increasing *perceptions* of social support, and designing to accommodate intimacy and reciprocity between individuals. Of particular importance for shout technologies is the emphasis on incentives for the support provider along with creating mechanisms to reduce the impact of diffusion of responsibility.

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