WITH HELP FROM STRANGERS:
SOCIAL SUPPORT AND SMOKING CESSATION IN
TECHNOLOGY-MEDIATED COMMUNITIES

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Nicotine is one of the most heavily used addictive drugs in the United States. Statistics from the Centers for Disease Control and Prevention (CDC) indicate that cigarette smoking remains the leading preventable cause of death in the United States, accounting for approximately one of every five deaths (440,000 people) every year, and resulting in more than 75 billion dollars in direct medical costs annually. It is estimated that 22.5 percent of all adults (46 million people) smoke cigarettes in the United States. The health benefits of cessation have been documented in numerous studies, including greatly reducing the risk of dying prematurely, lowering the risk for lung and other types of cancer, heart disease, stroke, and peripheral vascular disease, and reducing respiratory ailments. Women who stop smoking before or during pregnancy significantly reduce their risk for adverse reproductive outcomes.

In spite of the well documented and publicized risks associated with smoking, because of the highly addictive nature of nicotine, cessation is difficult. The addiction results in withdrawal symptoms when a person tries to stop smoking and creates acute stress. Research has found that when chronic smokers are deprived of cigarettes, they exhibit significantly amplified anger and stress, and a wide range of psychological and cognitive functions are impaired. Not surprisingly then, even though seventy percent of current U.S adult smokers reportedly want to quit completely, cigarette smoking remains a very difficult addiction to conquer, with the average success rates in most cessation programs at only around 15 to 25 percent.

Several studies have examined the effectiveness of various smoking cessation methods, such as instructional programs, self-care methods, and aversive techniques. A meta-analysis of this research suggests that cessation programs incorporating social support, social norms, and self-esteem enhancement were more effective than those that ignored such elements. Social support is typically characterized as emanating from family and friends. But there is little evidence on the effectiveness of social support provided by online “strangers” via technology-mediated communication.

With the proliferating availability and use of the Internet, especially online interactive technology, the potential contribution of this medium to preventive health care has captured the attention of health care providers, consumers, and researchers. In contrast to traditional smoking cessation programs, the Internet-delivered cessation program provides 24/7 social support through a number of Web sites, such as QuitNet.com and QuitSmoking.com. Although such sites have attracted a large number of smokers and ex-smokers, their effectiveness has not been studied and tested. In this study, we examine how the technology-mediated social support provided by an online virtual community influences its members’ smoking cessation behaviors.

The Research Model
We draw upon prior research in social support and social learning to hypothesize that smoking cessation outcomes can be predicted by the structural social support (i.e., quantity) and functional social support (i.e., quality) provided to the individual in the online community. We measure structural social support by the individual’s tenure in the community and the size of their social network, i.e., the number of community members they interact with. Functional social support is assessed by information need fulfillment, group identification, and identity consonance.
Continuing social support acts as a buffer against stress and can reduce individual anxiety and its negative consequences. By implication, continued membership and participation in an online community provides social support for quitters. Others have suggested that the duration of smoking cessation programs may affect success rate, i.e., a longer program should be more successful. In essence, a longer intervention allows for an amplification of behavioral reinforcement of success, more opportunities to overcome the negative effects of stress, and greater likelihood of being exposed to a larger number of successful role models. Hence, if a community member has had online support for a longer time, he/she is more likely to successfully quit smoking.

Although the exact nature of the relationship between the size of social network and positive emotional affect is inconclusive, in this study, we propose that the size of the online social network is positively related to the quitting outcome. People may be unable to avoid undesirable social support from their social network in a physical world. In contrast, online community members can intentionally choose how many contacts they would like to communicate with and with whom they want to interact. They can decide when and for how long they want to interact with support providers. Terminating a conversation is as simple as walking away from the computer or turning it off. Hence, we expect that increased stress caused by too many contacts is likely not to be a concern in an online setting.

Informational support is informational help in defining, understanding, and coping with a problem, such as suggestions, personal experiences, and guidelines. Empirical research in psychology and healthcare has found that informational support can increase individual welfare and reduce stress. A key aspect of coping with a new symptom or any new situation (such as the withdrawal caused by quitting smoking) is knowing and anticipating how one will feel in the new situation, and seeking advice from experts or trusted others on how to manage. In smoking cessation communities, a vast quantity of informational support is available. For instance, QuitNet.com provides counselor support, quitting guides, medication advice and shopping help, tobacco news, and successful stories from other members. It also organizes and announces local programs for people who need help offline.

When individuals experience affiliation and identification with others, they can be distracted from their physical and emotional problems and have more positive moods. Further, in the context of smoking cessation, individuals are more likely to model quitters’ behavior when they identify themselves with a virtual community whose members have a common cessation goal. In other words, they are more likely to model and imitate other’s successful cessation behavior when they have higher group identification.

Identity is “the individual’s self-appraisal of a variety of attributes along the dimensions of physical and cognitive abilities, personal traits and motives, and the multiplicity of social roles including worker, family member, and community citizen.” Prior work has defined identity consonance as the perceived fit between a focal person’s belief about his or her identity and the acknowledgement of that identity by other community members. Identity consonance increases member self-esteem by providing confirmation and affirmation of an individual’s self worth. In addition to its positive effects on self-esteem, identity consonance serves several other important functions in an online community. When an individual’s identity is understood by other community members with greater fidelity, the emotional support is likely to involve more empathetic understanding and be more helpful. Further, identity consonance may also help individuals obtain more personalized advice and information (higher quality informational support) based on their social roles, experience, personalities, etc. Finally, mutual understanding of identity can help individual community members find similar others who they can identify with and develop emotional attachment.

Research Setting and Data Collection Procedure
The context for our study is QuitNet.com, an online support community for people who want to quit smoking. It was first launched on the Web in 1995 by a smoking cessation counselor, and later was supported by the Boston University School of Public Health. About 3,000 messages are posted on QuitNet everyday.

According to the site, it has over 60,000 smokers and ex-smokers all over the world who congregate online each month to provide support to each other. QuitNet.com provides all of the desirable components of an online quitting program including a personalized quitting plan, a social support component with forums,
chat rooms, and private message systems, and information resources. The personalized quitting plan is designed as a quitting wizard. Users are encouraged to set a specific quitting date with a personalized agenda. The “Quit Anniversary” is celebrated site wide. The social support component encourages interactions between smokers and ex-smokers. There are also a large number of ex-smokers in the community, whose support could be especially effective and informative. Finally, the information resources available include expert support, medication support, news, guides, successful stories, and local events related to smoking cessation.

Data were collected via two online surveys of members of QuitNet. The first survey included questions measuring the independent variables--tenure, size of social network, group identification, information need fulfillment, and identity consonance. The follow-up survey, which was conducted two weeks later, included the measurement of quitting outcomes. In total, 500 complete responses were received. According to the QuitNet administrator, there were 3,769 unique US users who logged onto QuitNet during the week of the first round survey. Because there is no easy way to find out if those users actually checked their private messages during their online session, the response rate should be 13.3 percent or higher.

| Gender   | Male      | 87 (21.2%) |
|          | Female    | 324 (78.8%) |
| Age      | 18-25     | 21 (5.1%)  |
|          | 26-35     | 98 (23.8%) |
|          | 36-45     | 109 (26.5%) |
|          | 46-55     | 126 (30.7%) |
|          | >55       | 57 (13.9%)  |
| Education| 2 years high school | 6 (1.5%) |
|          | 4 yrs high school     | 101 (24.6%) |
|          | 2 years college       | 128 (31.1%) |
|          | 4 years college       | 78 (19.4%)  |
|          | > 4 years college     | 98 (23.8%)  |
| Internet Experience (years) | 8.31 (S.D. = 3.91) |
| Tenure (months) | 14.67 (S.D. =16.35) |

Table 1. Sample Demographics

Eighty-three respondents who had been QuitNet members for less than one month and claimed that they had quit smoking were deleted from the sample because previous research shows a very high relapse rate during the first few weeks of cessation, when withdrawal symptoms are strongest. We deleted another six responses due to missing values, yielding a final sample size of 411.

Table 1 presents the demographic information of the respondents in terms of gender, age, education, Internet experience, and community tenure. Consistent with other studies, there are more female (78.8 percent) than male respondents. Approximately 75 percent of the respondents have some college education, indicating a well-educated sample.

Tenure was measured by asking “How many months have you been a member of this community?” The size of social network was measured by asking “How many people do you interact with in this community?” The group identification instrument consisted of 6 items: “When someone criticizes this community, it feels like a personal insult;” “This community’s successes are my successes;” “When someone praises this community, it feels like a personal compliment;” “I’m very interested in what others think about this community;” “When I talk about this community, I usually say we’ rather than they;” and “If stories in the media criticize this community, I would feel bad.” For information need fulfillment we used a previously validated scale that asked respondents to rate the extent to which their online community helped them: get information; learn how to do things; generate ideas; solve problems; and make decisions. Finally, identity consonance was assessed by asking respondents to first list their salient identities in this community, and then to rate their perception of other community members’ recognition and verification of those salient identities.

Analysis

To measure identity consonance, respondents were asked “In QuitNet, who are you?” The responses surfaced both personal identities and social identities. Sample personal identities are “helpful”, “quiet”, “happy”, “scared”, “encouraging”, “knowledgeable”, “funny”, “healthy”, and “active”. Examples of social identities include “woman”, “teacher”, “student”, “lurker”, “democrat”, “mother”, “daughter”, “non-smoker”, etc. “smoker”, “ex-smoker”, or other smoking related identities were not the most frequently mentioned self-concepts given by the subjects. Previous research has found that people bring their social and personal identities to the work and the confirmation of those identities is important for employee satisfaction and performance. Likewise, we find that in an online community, users assume multiple identities, the verification of which may be associated with the quality of social support.

We tested the research hypotheses using multinomial regression analysis to assess prediction of membership in one of four categories of quitting status (non-smoker, quit before becoming a community member, quit after becoming a community member, and not quit). Results show that tenure, size of social network, information need fulfillment, and identity consonance are significantly related to quitting outcome.
In contrast to expectations, we found that members who had not quit smoking on average obtained more rather than less information from the community. This finding is possibly caused by the fact that searching and receiving information from the site is no longer a primary goal for respondents who had quit smoking and who are non-smokers. Also, group identification does not influence cessation outcome. A plausible explanation for its non-significance is that the efficacy of dyadic ties is far superior to a generalized feeling of belonging to the group.

Key Findings and Implications
Social support serves as a buffer for stress and social support from those with similar experience promotes social learning. In our context, the learning is about successful smoking cessation. In contrast to much extant research that has focused on social support provided by co-workers or family members, this study provides empirical support for the valuable and powerful effects of social support from other online community members, i.e., virtual “strangers”. We examined the role of the quantity and quality of social support provided by an individual’s social network in a virtual community on smoking cessation outcomes and found significant effects.

For practice, this study provides guidelines and insights for those seeking to develop online smoking cessation programs or other social support programs (such as cancer, domestic violence, etc.). Online social support provided by peers may serve as a complementary treatment, together with medication and professional consultation. Further, according to this study, healthcare practitioners can also develop a more effective online social support community by focusing on helping community members expand their social network online and facilitating mutual understanding. The inclusion of design feature such as individual profiles, interaction archives, and self-expression tools may be useful for the above purposes. New community features can also be designed to facilitate social network building and richer interaction.

The use of Internet-delivered health programs has become more prevalent, yet the effectiveness of such programs is still not well studied. For future research, it would be necessary to investigate the positive influence of online social support on other types of support programs, such as cancer, diabetes, etc. We believe that social support provided by online “strangers” has similar positive consequences to support provided by offline friends and family members. An interesting question to explore through experimental research is which source of social support, significant others or online friends, is more effective? Further, although we find evidence that the number of social support providers matters, it would also be interesting to explore a support seeker’s position in a social network together with network characteristics and their joint impact on cessation outcomes. Analyzing conversations between online community members may also reveal precisely what content of social support facilitates smoking cessation.

From a normative perspective, our results show that cessation communities should be designed such that they are able to retain members for a longer time, and promote high quality social interaction between members. Some human-computer interaction researchers are developing new community tools that can visualize social networks and promote mutual understanding online, and much more valuable research remains to be done in this area.

For more information about this research study or to request the complete working paper, please send an email to cangst@rhsmith.umd.edu.

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