Lurking Behavior in Online Psychosocial Discussion Forums:
Theoretical Perspectives and Implications for Practice
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Abstract

Improving outcomes of telebehavioral psychoeducation requires rethinking program design when delivered wholly or partially for self-directed participation. Discussion forum participation often follows the “90-9-1 Rule” where 90% of participants lurk, rather than contribute content. A theoretical perspective on the behavior can help explain its adaptive functions, as well as the threats that this behavior poses to the lurker. Implications for practice require program redesign that actively links individual skills-training and group-based discussion. The proposed linking design can synergize individual and group participation to support the development of mutual aid, as well as greater interaction with psychoeducation content and materials.

Key words: 90-9-1 Rule, lurking, online support groups, online psychoeducation, telehealth
A gerontology psychiatrist shared how the caregiver of an Alzheimer’s patient enjoyed the online discussion forum delivered through a dementia care information and advocacy website. When the caregiver was asked about her own discussion in the forum, she remarked that she did not contribute, but enjoyed reading the posts of others. Although the caregiver enjoyed reading the discussions, the anecdote suggests several questions for providers of online discussion forums. For instance, how many participants only read posts without contributing? Why don’t participants contribute? What drawbacks can occur for participants who read, but don’t contribute? In addition, discussion forums are often created to complement web-based psychoeducation programs. How does only reading, without contributing, affect program outcomes? How are discussion forums sustained if many participants only read and do not contribute to discussions?

Few of these questions have been addressed in the literature; however, the number of participants who only read and don’t contribute is known. The “90-9-1 Rule”, as described by Nielson (1996), summarized a pattern of participation in social networking on the internet. Nielson found the majority of internet users do not interact with others, but rather, participate only to observe others interacting. These individuals are referred to as “lurkers”. One percent of users were found to be daily or heavy users, while nine percent were infrequent users. The largest segment, 90 percent of users, did not interact. Significantly, the 90-9-1 Rule has also been found to operate in online discussion forums designed to deliver mutual support for purposes of complementing web-based psychoeducation in online psychosocial programs. Participation in several moderated, online, mutual support discussion forums over a period of
more than ten years matched Nielsen’s findings, with 90 percent of participants contributing only 1.3 percent of more than a half million posts (van Mierlo, 2014).

While it is known that the 90-9-1 Rule represents the pattern of participation in online social networks and mutual support discussion groups, it is not known why the majority of participants lurk. Are there adaptive functions for lurking behavior that sustain it? If so, what are the implications for online practice and psychosocial programs that include group discussion forums as a part of program delivery? Whereas participants may simply enjoy reading posts without contributing to the discussion, does this pose problems for the lurker and the group? This paper provides theoretical perspectives to address these questions, as they have several implications for the design and delivery of these types of online interventions. Addressing these issues can gain importance as telehealth practice continues to grow and as researchers, providers, and funders make decisions about resource usage and online services delivery.

Literature Review

The use of groups for the delivery of online psychosocial interventions, including psychoeducation, has been less effective than individual delivery (Barak & Grohol, 2011). Low rates of active participation are a significant problem (van Mierlo, 2014). There have been several explanations for low rates of participation in online groups, including the proposition that large numbers of participants are needed for the emergence of significant ongoing interaction (Taylor et al., 2008).

For instance, in Steed’s (2005) online family life education program, web-based content designed for individual learning was accompanied by a discussion board. Web-tracking software was used to monitor participation, which was bifurcated between use of either the web-based, individual activities or the group discussion activities, as opposed to the joint use of these
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activities. Steed interpreted user preference for the discussion board over web-based, individual instruction as … “a preference for interactivity or the common sense advice based on the experience of the lay participant” (p.66). However, visiting the discussion forum did not translate into active user-contribution of content. The forum’s insufficient posts were seen to have limited the engagement and return of visitors to the forum.

Taylor et al. (2008) reported a similar finding and made recommendations for increasing forum participation. In their intervention research, a discussion forum for mutual support was developed alongside individual, online delivery of parent management training. Only a few participants contributed content to the forum. Most lurked, only reading posts without contributing content by replying or posting their own messages. The researchers hypothesized that participation through group forums requires a subscriber threshold of several hundred participants for interaction to emerge. Discussion forums are asynchronous, so time lags occur between posts and replies. Hundreds of participants would be needed to overcome time lags that limit the immediacy of interaction and content contributions.

The 90-9-1 Rule

van Mierlo’s (2014) research provided a further explanation for low participation rates that refutes the proposition that large subscriber thresholds must be reached before interactivity emerges. van Mierlo studied tracking data for the combined participation of 63,990 participants with a total of 578,340 discussion forum posts in four online psychosocial intervention programs: the Alcohol Help Center, the Depression Center, the Panic Center, and the Stop Smoking Center. The duration of study participation varied among the four sites, with the smoking cessation site duration being the longest (2001-2012) and the problem drinking site duration being the shortest (2008-2012).
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The intervention programs that van Mierlo (2014) studied were classified by their developers as Digital Health Social Networks (DHSN) (Evolution Health, 2014), which were designed to provide adjunctive intervention to support client adherence to primary interventions, like pharmacotherapy. Similar to Steed’s (2005) family life education program and Taylor et al.’s (2008) parent management training intervention, the DHSNs consisted of interactive, individual web-based training and complementary group discussion forums. Differing from programs researched by Steed and Taylor et al., the discussions in the DHSNs were moderated. Consistent with the 90-9-1 Rule, participants were categorized as Superusers, Contributors, and Lurkers. Findings confirmed the 90-9-1 Rule across all four sites, with 90% of the combined site participants falling into the Lurkers category and accounting for a weighted average of 1.3% of all posts.

Theoretical Perspectives

The term “lurkers”, as defined by the 90-9-1 Rule, conveys numerous negative attributions. Lurkers’ desire for anonymity and failure to contribute content can evoke images of freeloaders taking advantage of the work of others. The term “social loafing” has been used to describe lurking (Karau & Williams, 1993). However, negative attributions may deter recognition of the adaptive function of lurking behavior. An underlying assumption about participants who seek assistance in online forums is that they want to understand and gain control over their distress. Based on that assumption and the internet’s capacity for information processing, storage, and rapid retrieval, it is asserted that achieving a sense of control when using voluntary, peer-to-peer, online discussion forums does not require interactive participation. This assertion will be demonstrated though theoretical applications of Bandura’s (1997) Self-Efficacy Theory,

**Self-Efficacy Theory**

Self-efficacy, or “the exercise of control”, was defined by Bandura (1997, p.7) as beliefs about one’s personal resources for taking actions that will result in goal achievement. Bandura identified four self-efficacy pathways, which are displayed in Table 1.

<table>
<thead>
<tr>
<th>Self-Appraisal Mechanisms</th>
<th>Description</th>
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<tbody>
<tr>
<td>Enactive mastery experience</td>
<td>Following guided instruction and appraising results gained through practice</td>
</tr>
<tr>
<td>Vicarious experience</td>
<td>Comparing self to similar, successful peers</td>
</tr>
<tr>
<td>Verbal persuasion</td>
<td>Taking action based on the influence and support of valued others</td>
</tr>
<tr>
<td>Physiological and affective states</td>
<td>Appraising stamina based on physical conditioning and stress management efforts</td>
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</tbody>
</table>

Of the four mechanisms, enactive mastery attainment was the most direct and influential source of self-appraisal for increasing self-efficacy. However, the pathway of “vicarious experiencing” (p. 86), in which participants achieved control through observation and self-comparison, provided understanding of an adaptive function of lurking behavior. In online discussion forums, this pathway does not require lurkers to interact with others or to contribute content. They need only to observe the discussions of similar models to achieve self-efficacy appraisals.

When considering these sources of self-efficacy, the internet’s enormous capacity for information storage and retrieval may, in fact, encourage lurking behavior in online discussion forums that are structured for voluntary, self-directed participation. In these types of forums, users can rapidly scan and search for numerous models for comparison and self-appraisal. These can be either mastery models, in the case of moderators who facilitate group discussion forums,
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or coping models, in the case of peers who have successfully handled a challenge through persistent effort in the face of failure and disappointment. However, when a person lacks confidence, according to Bandura (1997), peer model similarity is of greater importance to an observer. It is assumed that this would be true of lurkers in online discussion forums. “Coping-modeling” (p. 99) is the term Bandura used to describe vicarious experiencing for gaining control through observation of similar peer models. Coping models, as opposed to mastery models, make mistakes, confront setbacks, and—through effort and persistence—eventually succeed.

Therefore, in voluntary, peer-to-peer, self-help, mutual aid discussion forums, it is proposed that “lurking” predominates because this form of participatory behavior allows users to efficiently and rapidly observe a diverse set of peer models for the purposes of coping-modeling through vicarious experiencing to increase self-appraisal to gain control over a problem. The ability to obtain positive self-efficacy appraisals without participation can also serve lurkers to avoid stigma and negative self-efficacy appraisals that could occur through content contributions to group discussions.

Mental Health Stigma

Corrigan (2004) conceptualized two kinds of stigmas that are linked with mental health difficulties: public stigma and self-stigma. Both types deter individuals from seeking treatment. Public stigma deters individuals from seeking help when help-seeking can result in negative public appraisal based on cultural or social labeling. For example, a person seeking mental health treatment could be labeled as “crazy”. Self-stigma deters individuals from seeking help when help-seeking results in negative self-appraisal. For example, the same person seeking mental health treatment may self-appraise help-seeking as a sign of being “weak”.

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In the case of anonymous, self-directed, self-help, mutual aid discussions, self-stigma and the risk of ridicule would be the greater deterrent if it infers low self-esteem, following negative self-efficacy appraisals. In sum, lurking may serve an adaptive function of achieving control through vicarious experiencing and a protective function for avoiding self-stigma and the risk of ridicule that could develop when content is contributed to group interaction.

Andragogy and Lurking

In addition to the theoretical mechanisms that have been described, an application of the pedagogy of adult learning can further account for the prevalence of lurking in discussion forums. Lurking can be demonstrated to follow andragogic principles developed by Knowles (1984). Table 2 displays several of Knowles’ principles with proposed corresponding lurking behaviors.

Table 2: Andragogic Principles and Corresponding Lurking Behaviors

<table>
<thead>
<tr>
<th>Andragogic Principle</th>
<th>Lurking Behavior</th>
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<tbody>
<tr>
<td>Preference for self-directed learning</td>
<td>Searching for successful peer models</td>
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<tr>
<td>Immediacy valued</td>
<td>Seeking means to gain control over distress</td>
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<tr>
<td>Learning is internally motivated</td>
<td>Vicarious experiencing to increase self-efficacy</td>
</tr>
<tr>
<td>Problem-centered and not subject-centered</td>
<td>Comparing self to peers with similar problems</td>
</tr>
<tr>
<td>Uses life experiences as a resource</td>
<td>Finding coping models that overcome failure</td>
</tr>
</tbody>
</table>

In the case of the large DSHNs studied by van Mierlo (2014), the internet’s storage and retrieval capacity provide a repository for hundreds—if not thousands—of posts, which lurkers, following the principles of andragogy, may search to gain vicarious experience to increase self-efficacy and avoid self-stigma.
Threats to Lurkers

Negative attributions about lurking create the impression that the behavior is primarily opportunistic, taking advantage of the work of others. However, lurkers can also experience a number of negative outcomes, even though it may provide an adaptive function. In the group-based intervention designs that have been described, mutual support is an aim of intervention. Lurking mitigates against the development of mutual support when only one percent of participants actively contribute content to discussion. In addition, there are other specific problems posed for the lurker using voluntary, self-paced discussion forums.

The desire to engage in vicarious experiencing may cause lurkers to forego the individual web-based skills training that is also made available in these intervention designs. This poses two major threats to lurkers. First, when content contributions are only made by a small percentage of participants, the resources of the group are substantially limited, as are the type and range of modeled responses for gaining control over a problem. This limitation has been described as “participation inequality” (Nielsen, 2006). Nielsen described a number of disadvantages posed by participation inequality based on the nature of the content being delivered and on the nature of the consumers of that content. For example, “if you're a consumer trying to find out which restaurant to patronize or what books to buy, online reviews represent only a tiny minority of the people who have experiences with those products and services” (Downsides of Participation Inequality, par. 2). Similarly, lurkers seeking coping models for the purposes of vicarious experiencing would only observe a limited range of solutions based on participation inequality that results from the 90-9-1 Rule.

Bandura’s (1997) work suggests an even greater threat for lurkers. It is based in Bandura’s discussion of the limitation of self-efficacy appraisals obtained through vicarious
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experiencing and the actual skills needed to successfully take action to gain control over a problem. When a lurker has skills, but they have been misused, then self-efficacy appraisals may correct the misuse and provide both the motivation and the knowledge needed to take action to gain control over a problem. However, without prerequisite skills, positive self-efficacy appraisals may motivate action that only results in failure. If skills are absent, the lurker’s self-efficacy appraisals would be better directed toward seeking discussion posts where successful peers demonstrated persistence and effort to build prerequisite skills. However, due to participation inequality based on the 90-9-1 Rule, lurkers are exposed to only a minority representation of these types of discussions.

Implications for Practice

Based on these theoretical perspectives, implications for practice will be discussed for online programs that combine individual psychoeducation with group discussion forums. Implications for discussion forums available through websites that provide healthcare information and advocacy to patients and caregivers will not be discussed, as these are not designed for prevention or treatment. However, if these discussion forums are presented to provide informational and emotional support, participants should be informed of their limitations. Based on the pattern of participation described by the 90-9-1 Rule, participation inequality would limit the relevance of information support, as posts to discussion topics would only represent a minority viewpoint. Emotional support would also be limited by participation inequality, an obstacle to the development of mutual support.

There are two main types of program designs that include individual psychoeducation and group discussion, and they differ in terms of whether components are facilitator-directed or self-directed. These are designs for prevention programs and designs for treatment programs. In
prevention programs, like the DHSNs (van Mierlo, 2014), participation is entirely self-directed and self-paced. Individuals can participate in only psychoeducation, only discussion, or in both psychoeducation and discussion. In van Mierlo’s example, participation in the optional discussion forum followed the 90-9-1 Rule. In treatment programs, like Taylor et al.’s (2008) example, participants are enrolled for purposes of completing an individual psychoeducation training program, which is facilitator-directed and paced. However, participation in a group discussion forum is optional and self-directed.

Designers of treatment programs that include optional, self-directed discussion forums may assume mutual support will naturally develop through discussion, as it does in face-to-face group-based interventions. However, Cristancho-Lacroiz et al. (2015) provided data that illustrates the challenges to this type of delivery. In their program for caregivers of persons with Alzheimer’s disease, participation in individual psychoeducation was facilitator-directed. A discussion forum was optional and self-directed. While the majority of participants found the psychoeducation program was useful, overall, “caregivers expected more dynamic content and further interaction with staff and peers” (p. 1). Significantly, their analysis of usage patterns in the program website found “the most frequently visited section was the forum [descriptive statistics], whereas only 10 messages and 10 answers were posted” (p.8). In this example, psychoeducation and discussion were not linked, and while participants may have preferred the forum, minimal content was contributed, as would occur in the 90-9-1 Rule.

In summary, before mutual support can emerge, as occurs in face-to-face, group-based psychoeducation, a new design is needed for online psychosocial programs that deliver individual psychoeducation and group discussion. It is proposed that the development of mutual support requires a linking design that includes four main features: facilitator-directed individual
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training and facilitator-directed group discussion, alternating presentation of psychoeducation training modules and discussion, sequenced and prioritized discussion topics, and optimal group size.

**Recommended Design Modifications**

Primary to modification is actively linking forum participation with psychoeducation training, so that participation is no longer self-paced. This can be manually directed by facilitators in small programs or electronically directed in large programs, so that participation alternates between participation in individual psychoeducation and participation in group discussion. Without linking, discussion topics appearing in forums cannot be sequenced in any particular order. Content is not prioritized, as would occur in face-to-face, group-based psychoeducation. For example, a group discussion on coping would not be made available to participants until individual psychoeducation on coping skills was made available.

Sequencing and prioritization can also support persistence (Conceicao & Lehman, 2013). With this design modification, discussion participants are not overwhelmed by dozens of topics and hundreds of posts. Sequenced discussions that prioritize psychoeducational content can allow participants to personalize, discuss, and apply psychoeducation materials to reflect and revise their understandings. By minimizing the use of the discussion forum for solitary self-appraisal that occurs with lurking, discussion and psychoeducation outcomes can be synergized, enabling the emergence of mutual support.

A synergized design is proposed to provide greater opportunity for mutual aid to emerge when participants contribute their shared understandings based on experience and training. This is fostered by processes described in the literature of group work. William Schwartz (Shulman & Gitterman, 1986) used the term “mutual aid” to describe processes including “all in the same
boat”, “sharing data”, and “mutual support”. Within the context of group therapy, Yalom and Leszcz (2005) referred to mutual aid processes as curative factors, including “instillation of hope” and “universality”.

A further modification to design is group size. Rains and Young (2009) found group size to be important to the development of online social support. In their meta-analysis, online support groups that were too large reduced participation, possibly causing participants to feel isolated. Achieving optimal group size can be accomplished in large-scale programs through electronic, random assignment of participants into smaller groups. If a group is full, the participant is assigned to a next random group, and so on. Sequenced and prioritized discussions can then be moderated to further personalize participant experience. Module sequencing can also be based on a predefined logic that uses the findings from participant self-assessment surveys. Nonrandom group assignment can also be based on predefined logic and findings from self-assessment. In addition, participants who are not progressing through a program can be nudged via email or text messaging. Figure 1 displays a comparison of linked and unlinked group designs.
Conclusions

Telebehavioral psychosocial programs that deliver individual psychoeducation may include an adjunctive discussion forum for participants for the purposes of obtaining mutual support. However, the pattern of participation represented by the 90-9-1 Rule does not enable the development of mutual support. In fact, when described in the literature, discussion forums in these programs appear to be ineffective, due to low participation and a lack of contribution of content. Based on the theoretical perspectives outlined, when participation is entirely self-directed and self-paced, it may detract participants from using psychoeducational materials. If only the discussion is self-directed and self-paced, group-wide mutual support will not develop and participants will be exposed to threats posed by participation inequality.

Implications for practice were presented and can be tagged as “linking not lurking”. Design modifications are proposed to link participation in both psychoeducation and discussion forums. Linking removes the option for self-directed and self-paced activity, which promotes lurking. Participation in individual psychoeducation and group discussion can then be
synergized, and discussion forum content can be sequenced and prioritized based on delivery of psychoeducational content. Sequencing can improve persistence by reducing cognitive overload that participants can experience when searching through dozens of topics and hundreds of posts. Also essential to design modification would be management of group size. Participants should move through a program in small groups to avoid isolation that occurs in large group discussions. Self-assessment surveys, which are often delivered at the start of psychoeducational programs, can also be used for developing nonrandom electronic group assignments, and modules can be sequenced based on a predetermined logic for groups serving large numbers of participants.

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