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Challenging the Internet Paradox: Online Depression Communities and Well-Being

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Abstract: This cross-sectional study aimed to explore the association between the intensity of participation in online depression communities and the benefits users gain from participation. The study was based on an online survey of 631 users in 16 English language-based online depression communities. Results indicated that there were several differences between heavy, medium and light users with regard to their participation patterns, but they did not differ in their background characteristics and hardly varied in their interests. There were also no differences between the groups in their level of depression. However, there were many significant differences in perceived benefits gained, which demonstrated that heavy users reported receiving emotional support online and experiencing offline improvement more than medium and light users, and medium users reported these benefits more than light users. These findings suggest that contrary to some previous arguments regarding possible adverse consequences of intensive Internet use, heavy use of online depression communities is associated with positive results. Thus, it may even contribute to the general well-being of people with depression. Future research of the various associations between Internet use and psychological well-being should examine specific online activities, and explore diverse audiences including disadvantaged populations.

Keywords: Online communities, Internet paradox, mental health, coping, well-being, depression

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Introduction

Although there is a wide consensus on the contribution of the Internet to the quality of life among individuals and societies, studies of the psychological influences of the Internet often accused it of having a negative impact on users' psychological well-being. These studies frequently mentioned the "Internet paradox", a concept proposed by Kraut and colleagues following their study of Internet use and social involvement in 73 households during their first one to two years online (Kraut, Patterson, Lundmark, Kiesler, Mukopadhyay, & Scherlis, 1998). Based on their findings, they argued that although the Internet is often used for social interaction, it reduces social involvement and leads to social isolation and depression among heavy users.

Since its introduction, the "Internet paradox" has created quite a polarized ambience. Findings regarding the adverse psychological consequences of the Internet were inconsistent, and some studies even demonstrated that the Internet had a considerable potential of contributing to expanded social networks and increasing psychological well-being (e.g., Amichai-Hamburger & Furnham, 2007; Campbell, Cumming, & Hughes, 2006, Shaw & Gant, 2002). Other studies indicated that the impacts depended on the way people used the Internet, by demonstrating that social use (emails, chat rooms and instant messaging software) was associated with decreased

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depressive symptoms and anxiety, while non-social use (e.g., shopping, searching or playing games) was associated with increased symptoms and anxiety (e.g., Morgan & Cotten, 2003; Selfhout, Branje, Delsing, Ter Bogt, & Meeus, 2009).

Nonetheless, there is solid evidence for significant association between intensive Internet use and depression. Caplan (2003), for example, demonstrated that psychosocial health predicted levels of preference for online social interaction, which, in turn, predicted negative outcomes associated with problematic Internet use (Internet abuse and dependence). Fortson, Scotti, Chen, Malone, and Del (2007) revealed significant correlations between depression, frequent use of the Internet, and less frequent face-to-face interactions. In addition, individuals meeting criteria for problematic Internet use endorsed more depressive symptoms, more time online, and less face-to-face interactions than did those not meeting the criteria (Fortson et al, 2007; Shaw & Black, 2008). Similarly, Ceyhan, and Ceyhan (2008) found that loneliness, depression, and computer self-efficacy were significant predictors of problematic Internet use, and Bakken, Wenzel, Götestam, Johansson, and Oren (2008) showed that time spent on the Internet and prevalence of self-reported sleeping disorders, depression, and other psychological impairments increased linearly with Internet addiction scores. Existing studies also provide a sound indication for causality. For example, in a longitudinal study with adolescents, van den Eijnden, Meerkerk, Vermulst, Spijkerman, and Engels (2008) found that instant messenger use and chatting in chat rooms were positively related to compulsive Internet use, depression and loneliness in a follow-up study six months later.

One of the main explanations for the association between intensive Internet use and depression is that emotionally frail people prefer online communication over face-to-face interaction (Caplan, 2003; Fortson et al., 2007). In fact, it has been argued that intensive Internet use should be treated as a symptom of depression (te Wildt, Putzig, Zedler, & Ohlmeier, 2007). Such use was presented as maladaptive behavior, which put people with depression at a risk of aggravated depression as well as Internet addiction and Internet harassment (Caplan, 2003; Kim et al., 2006; Ybarra, 2004; van den Eijnden et al., 2008). But what happens when the Internet use of those frail individuals is intentionally directed towards coping with depression? This is where the "Internet paradox" may be challenged the most.

The existing research on the "Internet paradox" tends to focus on mainstream audience, and many of the studies were conducted with students. Moreover, even though there were exceptions (e.g., Morgan & Cotten, 2003; Selfhout et al., 2009; van den Eijnden et al., 2008), most studies referred to Internet use as a single activity. As the Internet offers numerous online activities, any argument regarding the association between Internet use and depression based on this approach should be considered as a potentially misleading generalization. In order to fully understand the "Internet paradox" and the various possible associations between Internet use and psychological well-being, studies should examine specific online activities, and explore diverse audiences including disadvantaged populations such as older adults, people with disabilities and ethnic minorities. As the "Internet paradox" puts great emphasis on depression, people with depression should be among the first to be examined in such further explorations.

The cybernetic revolution changed the way individuals with depression look for and receive help. Their use of the Internet in coping with depression is threefold: a source of information, a medium that facilitates receiving formal care, and a resource of social support (Nimrod, 2012). Using the Internet for social support is usually associated with online communities (online peer-to-peer support groups). Such communities can operate through diverse applications such as email lists, chat rooms, or forums/bulletin boards, but the latter seems to be the dominant technology. Compared with other immediate support alternatives (e.g., telephone hotlines) and face-to-face support groups, online communities have several advantages, including accessibility, anonymity, invisibility and status neutralization, greater individual control over the time and pace of interactions, opportunity for multi-conversing, and opportunity for archival search (Barak, 2007, Barak, Boniel-Nissim, & Suler, 2008; McKenna & Bargh, 2000; Meier, 2004). These characteristics, along with availability, may explain why people with stigmatized illnesses, and in particular people with depression, turn to online communities for help in understanding and coping with symptoms (Lamberg, 2003).

The literature on coping strategies distinguishes between appraisal-focused, problem-focused, and emotion-focused coping strategies (Weiten & Lloyd, 2008). Participating in online communities manifests a problem-focused coping strategy as the communities offer information that may be very useful in coping with various stressors. The communities also provide communal coping (Lyons, Mickelson, Sullivan, & Coyne, 1998), namely, a cooperative problem-solving process in which community users cope *together* with a problem that is perceived as a common one. In addition, the fact that users turn to online communities to discuss their difficulties suggests that their coping strategy is also emotion-focused (i.e., oriented toward managing negative emotions). Of the various emotion-focused coping strategies identified by Lazarus and Folkman (1984), turning to the communities may be best described as seeking social support. The social support provided online for people with marginalized and concealable identities has a significant impact on their offline reality. It even promotes “demarginalization”, leading to greater self-acceptance and decreased social isolation (McKenna & Bargh, 1998).

In the past decade online communities that are dedicated to the discussion of depression have grown into a mass social phenomenon estimated at dozens of such communities worldwide, with hundreds of thousands users. Parallel to their increased prevalence, a growing body of research tried to explore the communities’ potential role in the management of depressive disorders (for a review see Griffiths, Calear, & Banfield, 2009a; Griffiths, Calear, Banfield, & Tam, 2009b). However, so far only two studies have discussed the level of intensity in which individuals used communities.

The first study (Salem, Bogat, & Reid, 1997) compared the participation patterns of heavy and less-frequent users. As this study was based on content analysis, the distinction between the groups was based on their posting rate. Heavy users were defined as people who posted 14 or more messages in two weeks, and light users were those who posted less than that. The findings indicated that the heavy users were less likely to use the group to address their own concerns than the light users, as was evidenced by their lower levels of requests for help and of self-disclosure. They seemed to assume a helping role, as they were more likely to address their posts to an individual user, to include agreement and humor in their posts, and to provide emotional support and cognitive guidance. Notwithstanding these significant findings, using posting frequency to differentiate between heavy and less frequent users is problematic, as it disregards people who only read others’ posts (“lurkers”). Moreover, posting frequency does not necessarily reflect the frequency of visits nor the time spent in the communities.

The second study that examined heavy and less frequent users of online depression communities differentiated between the users based on the time spent in the communities. This study was a trial conducted by Houston, Cooper and Ford (2002), to examine the association between intensity of use and the psychological impact of participation. Measurements were carried out at baseline and after six and 12 months. Results demonstrated a positive psychological impact. They showed that over 50% of the study’s participants became heavy users (five or more hours in two weeks), and that they were more likely to have resolution of depression during follow-up than less frequent users. Yet, the credibility of this study is questionable, as it did not apply randomized controlled trials of the effectiveness (Griffiths, Crisp, Christensen, Mackinnon, & Bennett, 2010). The same weakness was found in studies that explored the impact on depression of online communities that did not deal specifically with depression. Furthermore, many of these studies combined additional interventions, hence they did not necessarily allow for an accurate evaluation of the benefits of the communities alone (Griffiths et al., 2009a).

The clinical approach, which was applied in many of the afore-mentioned studies, was harshly criticized by several scholars (Barak, Grohol, & Pector, 2004; Barak et al., 2008; van Uden-Kraan, Drossaert, Taal, Shaw, Seydel, & Laar, 2008), who argued against the application of particular therapeutic measurements in studies evaluating the effects of online communities. They claimed that separating the communities’ impact from other interventions was unrealistic and faulty, since none of them substituted treatment; and that the communities should be viewed as complementary to professional care, since that means of emotional support could provide empowerment, stress relief and improved general well-being.

Support for this argument may be found in survey studies that investigated subjective variables such as the perceived benefits and/or the reason for participating in online depression communities. Houston and colleagues (2002), for example, reported that emotional support was the main reason for participation, and that the majority of users agreed that participation alleviated their symptoms. Powell, McCarthy, and Eysenbach (2003) found that most repeat visitors reported gaining knowledge of depression, and about half of them indicated that they were “able to discuss subjects that they felt unable to discuss elsewhere,” and that they “felt less isolated”. Similar findings were found in other studies (e.g., Alexander, Peterson, & Hollingshead, 2003, Barak, 2007) which reported that users’ feedback was that the community provided them with help and understanding, an outlet for expression, and a place to turn when alone, and that participation was a process that led to a sense of relief and to a change in their lives. There is almost no evidence for perceived disadvantages of the communities (Griffiths et al., 2009b). While these studies provide substantial support for the impact of online depression communities on outcomes other than the level of depression, they lack differentiation among users. Hence, no study, so far, has examined whether the non-clinical benefits gained from participation in online depression communities are associated with the intensity of participation.

The present study

The present study aimed to provide some of the missing information in the current body of knowledge. The main goal of this study was to explore the association between the intensity of participation in online depression communities and the benefits users gain from participation. For that purpose, the study examined existing users of online communities. The indicator for intensity of use was frequency of visits in the communities, as it reflects the extent to which participation is an integral part of users' lives. This study built on the aforementioned previous research (e.g., Barak et al., 2008; van Uden-Kraan et al., 2008), which rejected the application of particular therapeutic measurements in studies evaluating the effects of online communities. Hence, the study examined perceived benefits gained from participation, and the level of depression was treated as a background variable.

Based on the literature regarding the "Internet paradox", it was hypothesized that higher frequency of visits in depression online communities is associated with higher levels of depression. However, based on the literature concerning depression online communities (especially Salem et al., 1997), the main hypothesis of the study was that users who visited the communities at various frequencies (i.e., on a daily-basis, weekly-basis or at a lower frequency) experienced *different* benefits from participation (rather than experiencing the same benefits at a different intensity). To test this hypothesis, the study explored three levels of use (heavy, medium and light) and not just two as done in previous research of online depression communities.

Specifically, the study was designed to answer the following questions:
1. What is the frequency of heavy, medium and light users of online depression communities, and can these segments be differentiated using background characteristics?
2. Are there differences between the groups in the interests they have in the issues discussed in the communities (which may explain their frequent visits), and do they differ in participation patterns other than frequency of visits?
3. Are there differences between the groups with regard to level of depression and perceived benefits gained from participation?

By addressing these questions, the relationships between users' behavior and well-being were explored, and some general conclusions regarding the impact of participation in online depression communities were drawn.

Method

Data collection and sample

The study was based on an online survey of 631 users of 16 online depression communities. In order to recruit participants, the Principal Investigator (PI) contacted the administrators of 30 active communities and asked for their permission to post a call for volunteers on their websites. All the communities were English-based and explicitly targeted people with depression (according to their names, home-pages, and welcome posts). Eleven community administrators approved and even posted the call on her behalf, two said that they would examine the request but never answered, and one refused. No data were collected where the consent of community administrators was specifically denied and where administrators promised to consider the request but never answered.

The other 16 community administrators did not respond to the PI even after being contacted three times. In these cases, the PI independently posted messages in the communities. As these communities were public, this step did not violate any ethics standards. Moreover, in order to minimize the intrusion into spaces that the users may have considered private, the call for volunteers was only posted once in each community. Nonetheless, of the 16 unauthorized messages posted, only five survived. Others were deleted by community administrators after a short period (between several hours to a couple of days) and the PI was banned. This reaction suggests that not obtaining permission from administrators prior to posting the invitations was not a viable strategy, and in retrospect, the PI strongly encourages researchers in the field to secure gatekeepers' support.[1]

The 16 communities surveyed in this study (11 approved and five non-approved) are listed in Table 1. It is assumed that some respondents were recruited by the short-lived posts in the other 11 communities. Their responses were included in the dataset because there was no way of separating them from the rest of the respondents (respondents were not asked to mention the name of the specific community from which they were referred to the survey). In addition, there was no reason not to respect those respondents' wish to participate in

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[1] *Editor's note.* The International Journal of Internet Science considers it a best practice and most ethical to obtain permission from on-line community moderators prior to posting an invitation to participate in Internet research.

the survey and to help in improving the quality of life of people in similar condition to theirs, regardless of their community administrators' preferences.

Table 1
The Communities Surveyed in This Study

Community name	Address	Type	Center
Beyond Blue	www.beyondblue.org.au	Forum	Australia
*Brain Talk Communities**	Brain.hastypastry.net	Forum	USA
*Christian Forums**	christianforums.com	Forum	USA
*Depression Fallout***	depressionfalloutmessageboard.yuku.com	Forum + Chat	USA
Depression Forums	www.depressionforums.org	Forum	USA
Depression Tribe	www.depressiontribe.com	Forum	USA***
Depression Haven	www.depressionhaven.org	Forum + Chat	USA
*Firefly**	http://www.fireflyhealth.org/page/1410	Forum	USA
*My Depression Connection**	forums.healthcentral.com	Forum	USA
Psych Forums	www.psychforums.com	Forum	USA
Psychlink	forum.psychlinks.ca	Forum	Canada
Talk Depression	www.talk-depression.org.uk	Forum	UK
*Topix - Depression Forum**	www.topix.com/forum/health/depression	Forum	USA
UKDF	ukdepression.co.uk	Forum	UK
Walkers in Darkness Forums	forums.walkers.org	Forum	USA
Wing of Madness	www.wingofmadness.com	Forum	USA

Note. *no official permission; **dedicated to people caring for depressed loved ones; ***not clear.

The call for volunteers (see Appendix A) included a short description of the research aims, and a link to the survey website (a SurveyMonkey® application). The first page of the website included a longer description of the study, a consent form, and the PI's contact information. Volunteers were asked to read the instructions and confirm their consent to participate. Then, they were asked to fill-in an online survey. They were invited to contact the PI with regard to any question they may have, but none did. There were no sampling criteria and participation was anonymous. Therefore, after considering the project, the ethics committee in the PI's institution ruled that as long as the research did not use any identifying details (including usernames, web names, IPs etc.) review was not necessary, and the study was exempted from human subjects review. Data collection lasted two months and ended when the questionnaire was filled by 1'000 people. After screening out those who did not sign the consent form and questionnaires with less than 80% of the questions answered, the sample size was 793. Thirty-one were excluded for not signing the consent form, 121 for not meeting the 80% criterion, and 55 for both. The 80% criterion was adjusted to the branching in the questionnaire (i.e., if someone replied with "yes" to question 1 and/or "no" to question 8 and/or 32, the number of questions skipped was deducted from the total number of questions one had to answer to meet the 80% criterion). For the purpose of the current investigation, only repeat visitors and newcomers who visited other depression communities were examined. Newcomers to the community from which they were referred to the survey, who did not visit other communities, were screened out. The final sub-sample size was 631. Seventy-one respondents (11% of the sample) were newcomers to the community from which they were referred to the survey, but they reported to have participated in other depression communities at least to some extent.

Measurement

The questionnaire (see Appendix B) included mostly closed and some open-ended questions. It was not mandatory to answer all the questions, and if any question caused the participants even the mildest inconvenience, they could choose not to answer it. Questions explored the following areas:

Participation Patterns. The interview began with nine general questions that examined how users learned about the community, and when they visited it for the first time. Additional questions looked at current usage patterns, including: frequency of visits, posting behavior, and visiting other online depression communities. The frequency of visits in the community from which they were referred to the survey and the frequency of visits in other communities were assessed in an identical manner. In both cases, participants were asked to mention how often they visited these communities, and were presented with a scale ranging from "every day or almost every day" to "less than once a month". Respondents were also asked to report if there were factors constraining their participation in the community, and if so, what these factors were.

Interest in Issues Discussed in the Communities. Respondents were presented with a list of the nine most-discussed topics in the communities (Nimrod, 2012), which included ‘symptoms’, ‘relationships’, ‘coping’, ‘life’, ‘formal care’, ‘medications’, ‘causes’, ‘suicide’, and ‘work’. They were asked to rate their interest in these topics using a four-point scale ranging from “have no interest” to “very interested”.

Benefits of Participation. Respondents were presented with a list of 13 statements, which describe various benefits from participation in online depression communities. This list was based on the literature review (especially Alexander et al., 2003, Barak, 2007; Houston et al. 2002; Powell et al., 2003). Respondents were asked to rate the extent to which each of the statements described the benefits they gained from participation, using a 5-point scale ranging from “totally disagree” to “totally agree.” Sample questions include items such as “I better understand my condition”, “I feel connected with others”, and “My condition is under better control”.

Depression Severity. Depressive symptoms were measured by the Iowa short form (Kohout, Berkman, Evans, & Cornoni-Huntley, 1993) of the Center for Epidemiological Studies Depression scale (CES-D; Radloff, 1977), asking 11 of the original 20 questions with 3 rather than 4 response categories. This is a self-report instrument that asks respondents to describe their mood over the past week, on a 3-point frequency scale (1 = rarely or almost none of the time, 2 = some or a little of the time, 3 = most or all of the time). Sample questions include items such as “In the past week I felt depressed”, “In the past week I felt lonely”, and “In the past week, I enjoyed life” (reverse coded).

Background Questionnaire. The last part of the interview included a background questionnaire with nine demographic and socio-demographic questions. The variables examined were: age, gender, perceived health, marital status, education, economic status, country of residence, having been diagnosed with depression (and if so, what the diagnosis was).

Data analysis

In order to examine differences between heavy, medium and light users, sample participants were split into three groups based on the data concerning frequency of visits (in the community they were referred from and/or in other online depression communities). The next step examined each group by their background characteristics and participation patterns. To identify significant differences between groups, cross-tabulations and chi-squared tests were employed, as well as one-way Analysis of Variance (ANOVA) and Least Significant Difference (LSD) tests.

To examine the differences between the groups with regard to the interest respondents had in the various issues discussed in the communities, one-way ANOVAs and LSD tests were used. The next step included calculating the depression scores for each respondent, and then the average for each group of users. Differences between the groups were examined by one-way ANOVA and LSD test. The last step of the data analysis was finding differences between the groups with regard to perceived benefits gained from participation. One-way ANOVAs and LSD tests were used to compare the mean level of agreement of each group with each of the benefit statements. A confidence interval of 95% was used in all tests. Alpha inflation was avoided by comparing only three groups of users (even though the data allowed for five groups), limiting the number of tests to those required to answer the research questions, and using an alpha level of 0.01 to detect reliable differences.

Results

Sample characteristics and participation patterns

Most of the respondents were 20–50 years old, and the mean was 36.3 years. Seventy-one percent were female, 49% were single, 35% were married and most of the rest were divorced. The average number of years of education was 14.8. Fifty-one of the respondents reported having average income and 34% reported income lower than average. Fifty-eight percent were from the US, 21% were from the British islands, seven percent from Canada, and six percent from Australia. Relatively few (7%) resided in non-English speaking countries.

Regarding health, 51% perceived their health as good or excellent, and only 15% perceived their health as poor. Most respondents (76%) reported having been diagnosed with depression. The most frequent reported diagnosis was major depression (68%), followed by bipolar disorder (15%) and dysthymia (5%). Depression scores ranged between 11 (least depressed) and 33 (most depressed), with a mean score of 23.84, and 82% of the sample had depression scores higher than 21 (the cutoff for depression). Detailed findings regarding respondents’ characteristics are presented in Table 2.

Of those who were repeat visitors in the community from which they were referred to the survey, 20% were relatively new users (less than a month) and about 40% were “veterans” (more than a year). Most repeat visitors (83%) reported being active (i.e., posting messages) at least to some extent, and 52% of the “posters” reported having opened new discussions as well as having replied to others’ posts. Sixty percent reported having constraints on participation, and the most common constraints were depression itself (53%) and lack of time (23%). Most respondents found the community either after intentional searching for online depression community (51%) or coincidentally (40%). Only one percent learned about the communities from their therapists.

Table 2
Sample Characteristics

	%	*N*
Gender		
Female	70.7	436
Male	29.3	181
Marital status		
Single	49.5	305
Married	35.2	217
Separated	3.9	24
Divorced	10.7	66
Widowed	0.6	4
Income		
Lower than average	34.2	208
Average	50.9	310
Higher than average	14.9	91
Country of residence		
USA	58.2	348
Canada	7.4	44
Australia	6.2	37
UK & Ireland	21.2	127
Other	7.0	42
Self-reported condition		
Diagnosed with depression	75.7	436
Depressed but not diagnosed	13.7	79
Caring for someone with depression	7.5	43
Other (e.g., past depression)	3.1	18
Type of diagnosis		
Major depression	67.8	327
Bipolar disorder	14.5	70
Dysthymia	4.6	22
Other (e.g., post-partum, seasonal)	1.8	9
Other comorbid with depression	5.4	28
Depression score		
Higher than 21 (the cutoff for depression)	82	515
Perceived health		
Excellent	8.6	54
Good	42.9	270
Fair	33.7	212
Poor	14.8	93
Other descriptors		
Mean age in years (SD)	36.3 (12.6)	597
Mean numbers of years of education (SD)	14.8 (3.2)	596
Mean Depression score (SD)	23.8 (4.9)	628

Frequency of each user type and differences in background characteristics

Based on the reported frequency of visits in the community from which they were referred to the survey and/or other depression communities (questions 3 and 9), respondents were split into three groups: heavy, medium and light users (see Figure 1). Respondents, who reported having visited the community from which they were referred to the survey and/or other depression communities on a daily-basis (i.e., every day or almost every day), were considered heavy users. They comprised 39% of the sample. Respondents who reported having visited the community and/or other depression communities on a weekly-bases (i.e., between one and four times a week) were considered medium users. These users comprised 34% of the sample. The rest of the sample participants (27%) were considered light users. This group included respondents who reported having visited the community and/or other depression communities less than once a week. Hence, most of the sample was comprised of either heavy or medium users. The data did not reveal any differences between the three groups in their background characteristics. These included age, gender, economic status, education, family status, health perception, and state of residence. Data represent reported frequency of visits in the community from which respondents were referred to the survey and/or other online depression communities.

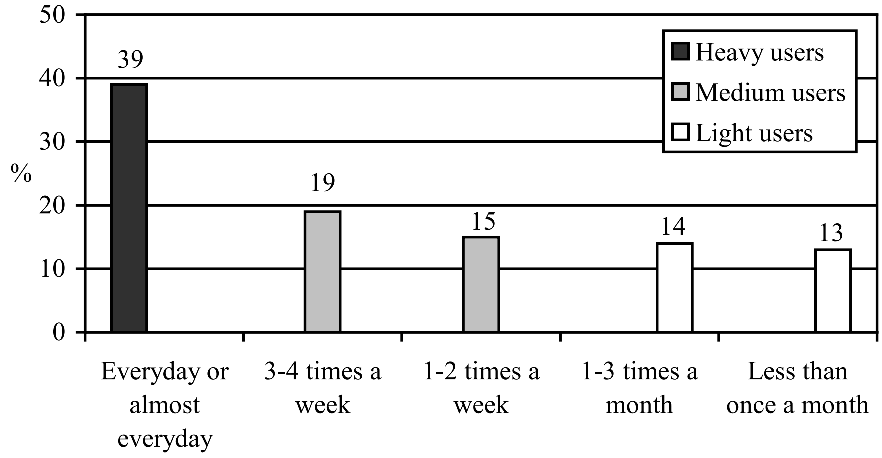

Figure 1. Frequency of visits in online depression communities.

Differences between the groups in participation patterns and interests

Analyses showed significant differences between the groups with regard to reported participation patterns other than frequency of visits. These included visiting other communities and the frequency of these visits, the frequency and type of active participation (i.e., posting patterns), and duration of use (see Table 3). Results indicated that the heavy users were more likely to report visiting other communities, whereas light users were less likely to report visiting them. Among those who reported having visited other communities, heavy users reported more frequent visits than medium and light users.

Heavy users also tended to report more active participation, and most of them reported posting messages many times or every time they visited the community. Medium users were more likely to report posting “several times”, and the highest percentage of “lurkers” (i.e., users who reported only reading others’ posts but not posting messages) was found among light users. Among those who reported active participation, light users tended, more than other groups, to report that they mostly opened new discussions, and heavy users tended to report that they both opened discussions and replied to others’ posts.

Light users tended to report longer duration of use. Almost 40% of this group reported that the first time they visited the community from which they were referred to the survey was more than a year before the survey. There were significantly fewer “veterans” and significantly more new users (up to three months) among medium users. No differences between the groups were found with regard to reporting constraints on participation, the type of participation constraints, and the way users became familiar with the community.

Analysis of the differences between the groups with regard to the interest they had in issues discussed in the communities identified only one significant finding. One-way ANOVA and LSD test demonstrated that heavy users were significantly more interested in formal care than medium and light users, $F(2, 571) = 8.221$, $p < .001$, with no significant differences between the latter two groups. There were no significant differences between the groups with regard to the other eight issues examined. Hence, overall, the groups shared similar interests.

Differences between the groups in level of depression and perceived benefits

After calculating the average depression score for each group, and conducting ANOVA and LSD test, results indicated no significant difference between the groups with regard to the level of depression. In addition, no differences were found with regard to self-defined condition (i.e. diagnosed as depressed, depressed but

Table 3
Differences Between Groups in Participation Patterns (in %): Cross-Tabulations and Chi-Squared Tests

	User type			**Sample**
	Heavy	**Medium**	**Light**	
Visit other communities: χ^2 (2, N = 623) = 29.18, $p < .001$				
Yes	48.6	40.8	30.9	41.3
No	51.4	59.2	69.1	58.7
N	245	213	165	623
User type in Other Communities: χ^2 (4, N = 223) = 26.36, $p < .001$				
Heavy	32.4	17.9	18.5	22.9
Medium	23.0	48.8	15.4	30.5
Light	44.6	33.3	66.2	46.6
N	74	84	65	223
Frequency of active participation: χ^2 (8, N = 564) = 84.72, $p < .001$				
Every time	26.2	9.1	10.3	16.1
Many times	29.9	17.3	5.5	19.1
Half of the time	13.1	13.7	11.0	12.8
Several times	22.6	41.1	45.2	34.9
Not active (lurker)	8.1	18.8	28.1	17.0
N	221	197	146	564
Type of active participation: χ^2 (6, N = 470) = 29.41, $p < .001$				
Mostly open	5.3	15.5	23.3	12.8
Mostly reply	32.0	36.0	39.8	35.1
Both	62.6	48.4	36.9	52.1
N	206	161	103	470
Duration of use: χ^2 (8, N = 567) = 30.19, $p < .001$				
Less than 1 Month	23.8	23.9	8.8	19.9
1–3 months	13.1	18.3	15.6	15.5
3–6 months	12.1	15.7	10.9	13.1
6 months–1 year	8.5	13.7	15.0	12.0
More than a year	42.6	28.4	49.7	39.5
N	(223)	(197)	(147)	(567)

undiagnosed, caring for someone with depression, etc.) and the reported type of diagnosis among those who reported having been diagnosed. Conversely, significant differences were found with regard to all perceived benefits gained from participation.

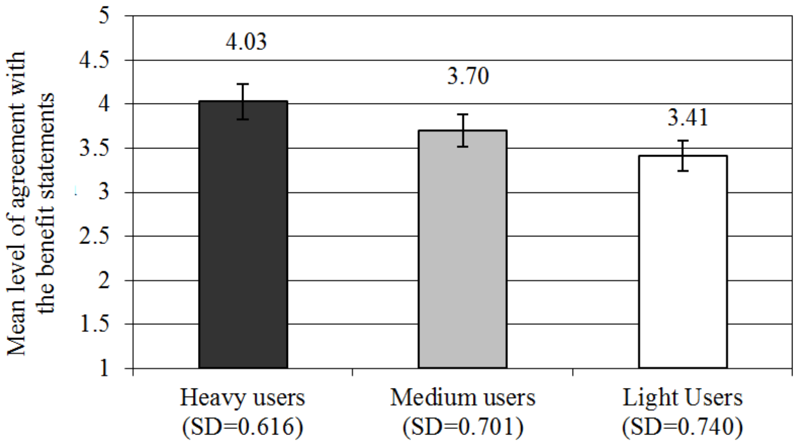

Figure 2. Differences in perceived benefits gained: Average level of agreement with the benefit statements for each group of users. Level of agreement was measured using a 5-point scale ranging from “totally disagree” to “totally agree.” Means are significantly different (p < .001) according to ANOVA and LSD tests.

Overall, the average level of agreement with the benefit statements was 4.03 for the heavy users, 3.70 for the medium users, and 3.41 for the light users (see Figure 2). A series of ANOVAs and LSD tests demonstrated that heavy users reported a significantly higher level of agreement with the benefit statements than medium and light users, and the medium users reported a significantly higher level of agreement with the these statements than light users (see Table 4). This was indicated with regard to immediate benefits of participation (e.g., feeling connected, feeling understood), as well as in benefits that permeated into users' offline reality (e.g., better coping, feeling better).

Table 4
Differences in Perceived Benefits Gained: Summary of One-Way ANOVAs and LSD Tests

Benefit		**Heavy**	**Medium**	**Light**	**Sample**	**F**	***p***	***N***
I can share my difficulties with other participants	Mean	4.52^{a}	4.16^{b}	3.86^{c}	4.20	26.76	<.001	554
	SD	0.67	0.85	1.06	0.90			
I can be of help to others	Mean	4.25^{a}	3.84^{b}	3.46^{c}	3.87	28.30	<.001	549
	SD	0.85	1.03	1.12	1.05			
I feel connected with others	Mean	4.35^{a}	4.00^{b}	3.68^{c}	4.03	21.98	<.001	551
	SD	0.83	1.00	1.06	1.00			
I feel understood	Mean	4.39^{a}	4.09^{b}	3.85^{c}	4.12	14.01	<.001	553
	SD	0.85	1.01	1.12	1.01			
I cope with the depression better	Mean	4.01^{a}	3.55^{b}	3.30^{c}	3.63	26.82	<.001	547
	SD	0.92	0.88	1.03	0.98			
I better understand my condition	Mean	4.17^{a}	3.87^{b}	3.60^{c}	3.89	20.21	<.001	554
	SD	0.81	0.90	0.87	0.89			
I'm getting better	Mean	3.55^{a}	3.37^{a}	2.90^{b}	3.29	17.86	<.001	550
	SD	1.00	1.08	1.12	1.09			
I am more capable of dealing with daily tasks	Mean	3.71^{a}	3.31^{b}	3.10^{c}	3.39	21.87	<.001	552
	SD	0.87	0.95	0.88	0.93			
I have more hope	Mean	3.94^{a}	3.56^{b}	3.28^{c}	3.61	20.48	<.001	550
	SD	0.95	0.99	1.03	1.02			
I get inspiration for fighting depression	Mean	4.16^{a}	3.94^{b}	3.56^{c}	3.90	18.65	<.001	553
	SD	0.85	0.88	1.07	0.96			
I handle my relationships with others better	Mean	3.62^{a}	3.23^{b}	2.98^{c}	3.29	19.84	<.001	551
	SD	0.99	0.94	1.00	1.01			
My condition is under better control	Mean	3.52^{a}	3.19^{b}	2.97^{c}	3.24	13.93	<.001	551
	SD	0.99	1.01	1.03	1.03			
I gain knowledge about various treatments	Mean	4.24^{a}	3.99^{b}	3.83^{b}	4.03	11.77	<.001	553
	SD	0.72	0.82	0.94	0.84			

Note. Means that are significantly different according to the LSD tests are denoted by different letters ("a", "b" and "c"). If the mean score for a certain benefit statement is "a" for the heavy users, "b" for the medium users and "c" for the light users, this means that the mean score of the heavy users is significantly higher than the mean score of the medium and the light users, and that the mean score of the medium users is significantly higher than the mean score of the light users. If two means are denoted by the same letter, this means that there is no significant difference between the two groups, and that both differ from the third.

Discussion

This study is the first to segment depression communities' users based on their frequency of visits, the first to explore three levels of use, and the first to examine whether the non-clinical benefits gained from participation vary among users reporting different intensity of use. This combination, and the fact that measurements included both clinical and non-clinical variables, provided some of the missing information in the current body of knowledge, produced a detailed understanding regarding community users, and may serve as a basis for several arguments regarding the contribution of online depression communities to users' well-being.

One of the most salient findings of the study is that there were many differences between heavy, medium and light users of online depression communities in their reported patterns of participation. Heavy users reported more active posting, and both opening discussions and replying to others' posts. They also tended to report visiting other depression communities more than the medium and light users, and described a high level of involvement in these communities as well. These findings have methodological consequences, as they suggest that different variables may serve as indicators for intensive use. However, the main significance of these findings is that they suggest that intensive use manifests itself in various behaviors.

Combining the participation patterns reported by heavy users with the findings of Salem and colleagues (1997), who found that heavy users tend to assume a helping role, as well as with the fact that heavy users in the current study were more likely to report that they “can be of help to others”, leads to the conclusion that for these users, participation is, to some extent, an altruistic activity. Had the heavy users been more veteran than others, or had they been less depressed than others, one could have concluded that they help other users because their condition is better or because their experience made them more knowledgeable than others. However, since no such differences were found, it seems that in addition to receiving direct benefits from participation, the heavy users also helped themselves by helping others and gaining some empowerment as a result.

The high involvement exhibited by the heavy users resembles what the leisure literature describes as “serious leisure” (for a review, see Stebbins, 2007). Serious leisure is a free-time activity characterized by considerable commitment, effort and perseverance. Serious leisure is often the case of volunteer activities, in which participants offer help, either formally or informally, for the benefit of both other people and the volunteer, as it is associated with many enduring psychological rewards. The latter element is, too, evident in the findings of the current study, as they show that heavy use of the community is associated with experiencing the various possible benefits in a more powerful manner compared with medium and light use. Heavy, medium and light users do not experience different benefits, as hypothesized. They experience the *same* benefits in a different intensity.

As all the correlations between frequency of visits and perceived benefits were positive, one may wonder whether response behavior generally differs among heavy, medium and light users and may thus offer an alternative explanation to the findings. Since a “click through” behavior is quite frequent in online surveys, respondents may have clicked on the highest/middle/lowest option throughout, leading to the results found in this study. However, given that a) it was not mandatory to answer all the questions, b) whereas the frequency of visits was measured by a descending scale (higher frequencies ranked lower) the level of agreement with the benefit statements was measured using an ascending scale (higher level of agreement ranked higher), and that c) even though the CES-D scale included reverse coded items the groups did not differ in their depression scores, such an alternative explanation is rather refutable. In addition, analysis of repeat visitors who signed the consent form but did not meet the 80% criterion regarding their frequency of use was rather similar to the frequency found in this study (30% light users, 34% medium users and 36% heavy users). Hence, it is probably not asymmetric non-response that is responsible for the findings.

The fact that there was no significant difference among the groups with regard to the level of depression contradicts the hypothesis of this study and challenges quite a few previous studies. First and foremost, this finding challenges the “Internet paradox” (Kraut et al., 1998), according to which the Internet is a social medium that reduces social involvement and leads to social isolation and depression among heavy users. Accordingly, this finding does not support the many studies that provided evidence for significant association between depression and intensive Internet use (e.g., Bakken et al., 2008; Caplan, 2003; Ceyhan & Ceyhan, 2008; Fortson et al., 2007; Shaw & Black, 2008; van den Eijnden et al., 2008). Instead, this study suggests that for participants in online depression communities, the “Internet paradox” does not exist.

The lack of difference in the level of depression among the groups, combined with the fact that heavy users reported a significantly higher level of agreement with the various benefit statements than medium and light users, suggest that participation may lead to enhanced well-being even without having an effect on particular therapeutic measurements. Thus, this study supports previous arguments regarding the use of a clinical approach when examining online support groups (Barak et al., 2004; Barak et al., 2008; van Uden-Kraan et al., 2008). The reported benefits included items that indicated receiving understanding and support online, which is valuable in its own right (Alexander et al., 2003; Barak, 2007; Houston et al., 2002; Powell et al. 2003). In addition, they suggested that participation had an impact that permeated into users’ offline reality and led to a sense of improvement in their condition. This was manifested in better understanding of one’s condition and various treatments, better coping and general well-being, increased sense of control, and generally more hope and motivation to fight depression. In other words, the findings suggest that participating in online depression communities has both *intrinsic* benefits that occur while participating, and *extrinsic* benefits that result from participation but permeate into daily life.

The findings that showed that participation patterns were not associated with any socio-demographic characteristic are surprising, as one may have expected to find, for example, that heavy users were younger, single, more educated and/or more affluent, as found in studies of general use of the Internet (e.g. Assael, 2005; James, Sharland, Petkovic, Torres-Baumgarten, & Spivakovska, 2010). Another unexpected finding is the absence of many associations between participation and interests. Higher interest in issues discussed in the communities may have explained heavy users’ involvement, as it could be regarded as a motivating factor. However, only one difference was found. It is therefore difficult to explain what motivates the heavy users. One possibility, however, is that their involvement is both the reason for and the result of the benefits they gained from participation, as some basic motivation models (e.g., Mannell & Kleiber, 1997) suggest.

The fact that the heavy users were not more depressed than medium and light users, but at the same time reported more improvement in their condition (e.g., more hope and better coping) suggests that had they not participated in the communities, they would have suffered a higher level of depression. This suggestion is in line with the findings of Houston and colleagues (2002), which demonstrated resolution of depression among heavy users. It may also find support in studies that indicated that social use of the Internet was associated with decreased depressive symptoms and anxiety (e.g., Morgan & Cotten, 2003; Selfhout et al., 2009). Moreover, the fact that the light users were more "veteran" than others but not less depressed and benefitted the least from participation, suggests that it is not the duration of use, but rather the intensity of it, that matters.

The current study demonstrates that for people with depression having frequent online communication with others in their condition may be very helpful, regardless of whether they receive help, provide it to others, or both. Such communication with others who are able to understand what they are going through may redeem users of the isolation that often accompanies depression, make them realize that they are not alone, and empower them. Therefore, the current study may join previous research (e.g., Amichai-Hamburger & Furnham, 2007; Campbell et al., 2006, Shaw & Gant, 2002) that commended the Internet for its potential to contribute to increased well-being, arguing that the participation in online depression communities may be viewed as an effective complimentary means for coping with depression. More generally, the findings of this study verify the need to examine the "Internet paradox" and the various associations between Internet use and psychological well-being among more diverse audiences and in a greater resolution than previous research did.

Limitations and future research

Notwithstanding the strengths of this study, it has several limitations that should be acknowledged. First of all, the present study was cross-sectional, hence only associations were examined and not causalities. Second, even though the frequency of visits was a good indicator for intensity of use, combining it with the duration of each visit (a variable not examined in this study) could be an even better parameter. Third, only few precautions were taken against common method variance of subgroups of participants. This is particularly true for the interests and benefits examined in this study. Whereas some variables were measured using a descending scale (e.g., frequency of visits), and others by an ascending scale (e.g., time since first visit) or a mixed one (e.g., the CES-D), respondents' interests and their level of agreement with the benefit statements were measured using ascending scales only.

Future research, then, should investigate online depression communities using longitudinal methods, include additional variables, and use additional precautions against common method variance of subgroups of participants. They should also examine non-English speaking communities to explore cultural variations. Because of the many benefits communities offer, further studies should also look for ways to promote participation among people with depression who do not visit online communities (e.g., by public relations and advertising online and offline). With only 1% referred to the communities by their therapist, additional research should also examine professionals' awareness and attitudes, and explore educational activities.

Acknowledgements

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Appendix A
The call for volunteers

Re: You can help improve the quality of mental health care

NARSAD, the Mental Health Research Association, is conducting a research project about Depression Online Communities, and your help is needed.

The purpose of this project is to better understand online communities for depression support and to explore participation preferences, the relevance of subjects discussed, possible constraints on participation, and the potential contributions.

Participation in this survey is anonymous and voluntary. No risks are anticipated, and the questions are not expected to cause any discomfort.

Volunteers will simply be asked to fill the survey and sincerely answer all (or most) questions. This should take about 5–10 minutes of their time.

To review the survey, please visit:
http://www.surveymonkey.com/s.aspx?sm=SwOkQxWIpc9gKUJEnuq32Q_3d_3d

The results of this study will be used for scientific purposes only.

They may be published in a scholarly report, a journal article and/or a conference presentation.

I encourage you to participate. It is anonymous and will not take much of your time.

Please contact me if you have any questions.

Warmly,

Galit Nimrod, Ph.D.
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Appendix B
The questionnaire

Page 1:

Dear Participant,

Thank you for considering taking part in this research project on Depression Online Communities!
The purpose of this project is to better understand this relatively new phenomenon, and to explore participation preferences, the relevance of subjects discussed, possible constraints on participation, and the potential contributions.
The study is sponsored by NARSAD, the Mental Health Research Association, and the results will be used for scientific purposes only. They may be published in a scholarly report, a journal article and/or a conference presentation. Publishing the results may lead to greater awareness among professional audience. Thus, your participating in the survey may help other people around the world.
As a participant in this research project, you are asked to fill the following survey and sincerely answer all (or most) questions. This should take about 10 minutes of your time. Your participation in this project is anonymous and voluntary. No risks are anticipated, and the questions are not expected to cause any discomfort. However, in case that you find that a specific question causes even mild inconvenience, you may choose not to answer it. You are also free to withdraw your consent for participation at any time and for any reason.
At the bottom of this letter, please indicate whether you agree to participate in this project. If you have any questions about this research project, please feel free to contact me either by e-mail, telephone, or fax.
Sincerely,
Galit Nimrod, Ph.D.
The principle investigator
Ben Gurion University of the Negev
gnimrod(AT)som.bgu.ac.il
Phone: 972-8-647-9734
Fax: 972-8-6472920

I have read the above explanation and agree to participate in the research project described

● No ● Yes

Page 2:

1. You found our call for volunteers at a depression online community. Is that the first time that you visit this community?
    a. Yes (go to 7)
    b. No
2. When was your first visit?
    a. Less than a month ago
    b. between 1 to 3 months ago
    c. Between 3 and 6 months ago
    d. Between 6 and 12 months ago
    e. More than a year ago
3. How often have you visited this online community since your first visit?
    a. Every day or almost every day
    b. 3–4 times a week
    c. 1–2 times a week
    d. 1–3 times a month
    e. Less than once a month
4. Have you posted messages when visiting this community?
    a. Yes
    b. No. I just read other participants' posts (go to 7)
5. How often have you posted messages in this community?
    a. Every time or almost every time I visited it
    b. In many visits
    c. In about half of my visits
    d. In few visits
6. Were your messages mostly opening a new discussion, mostly a reply on others' messages, or both?
    a. mostly opening a new discussion

   b. mostly a reply to others' messages
   c. both
7. How did you get to know about this online community?
   a. I run into it while surfing the web
   b. I was purposely looking for depression online community
   c. My therapist told me about it
   d. Someone else (family, friend, colleague, etc.) told me about it
   e. Other __________
8. Do you also visit other depression online communities?
   a. Yes
   b. No (go to 10)
9. How often have you visited other depression online communities?
   a. Every day or almost every day
   b. 3–4 times a week
   c. 1–2 times a week
   d. 1–3 times a month
   e. Less than once a month

The following list contains the most discussed subjects in depression online communities.
Please rate how interested you are in each subject.

	I have no interest	I have little interest	I'm quite interested	I'm very interested
10. Causes for depression				
11. Symptoms of depression				
12. Formal care (i.e., therapy)				
13. Medications				
14. Coping with depression				
15. Daily living with depression				
16. Relationships				
17. Work related challenges				
18. Suicidal thoughts				

The following statements represent what some people say about depression online communities.
Please indicate the degree of your agreement with each statement.
(If you are a "first timer," you can refer to your EXPECTATIONS these communities to be.)

As a result of participating in depression online communities…	I totally disagree	I quite disagree	neither agree nor disagree	I quite agree	I totally agree
19. I better understand my condition					
20. I can share my difficulties with other participants					
21. I am more capable in dealing with daily tasks					
22. I gain knowledge about various treatments					
23. I feel connected with others					
24. I cope with the depression better					
25. I have more hope					
26. I handle my relationships with others better					
27. My condition is under better control					
28. I can be of help to others					
29. I get inspiration for fighting depression					
30. I feel understood					
31. I'm getting better					

32. Is there is anything that limits your ability to spend more time at depression online communities?
    a. Yes
    b. No (go to 34)
33. Which of the following reasons limit your ability to do that?
    (you can mark more than one)

a. lack of time
b. lack of energy
c. internet accessibility
d. language barriers
e. the depression itself
f. Other ________________

The following is a list of statements describing how people sometimes feel.
Next to each statement, please mark the answer category that indicates how often you felt that way DURING THE PAST WEEK.
The best answer is usually the one that comes to your mind first, so do not spend too much time on any one statement.

In the past week…	HARDLY EVER	SOME OF THE TIME	MOST OF THE TIME
34. I felt depressed			
35. I felt that everything I did was an effort			
36. My sleep was restless			
37. I was happy			
38. I felt lonely			
39. People were unfriendly			
40. I enjoyed life			
41. I did not feel like eating. My appetite was poor.			
42. I felt sad			
43. I felt that people disliked me			
44. I could not get "going"			

45. How would you rate your physical health at the present time?
    a. Excellent
    b. Good
    c. Fair
    d. Poor

Page 3:

As a last step, please provide the following general information:

46. Your gender:
    a. Male
    b. Female
47. Your Age: _____
48. Your marital status:
    a. Single
    b. Married
    c. Separated
    d. Divorced
    e. Widowed
49. Total years of education (including school, college, etc.) you have completed: ______
50. Economic status:
    a. Lower than average
    b. About the average
    c. Higher than average
51. Country of residence ____________
52. Are you
    a. Diagnosed with depression
    b. Depressed but not officially diagnosed
    c. Caring for someone close who has depression
    d. Other __________

Answer this last question <u>only if you were diagnosed</u> with depression.
53. What was the diagnosis of your condition?

a. Major depressive disorder (also known as major / unipolar / clinical depression, or simply depression)
b. Dysthymia
c. Seasonal Affective Disorder
d. Postpartum Depression
e. Bipolar disorder

Thank you very much for your time and co-operation!!!