Who’s Contributing: Do Personality Traits Influence the Level and Type of Participation in Online Communities

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Abstract
This paper reports on a study that investigated the question of whether the personality traits of individuals participating in online communities affect the nature and level of their involvement. An online survey gathered data on the level and type of each participant’s engagement in their online community forum, as well as data from a 44 item instrument for measuring personality type, based on the Big-Five Inventory. The findings showed that no one personality type was predominant amongst participants, but that motivations for participating varied according to personality type, and that individuals high in certain personality traits (such as neuroticism) are less likely to actively participate in much of the online activity of the community. This has implications for online consultation by governments if they wish to use online community discussions for assessing public opinion of matters of policy.

1. Introduction
Online communities are becoming increasingly common, especially with the growing popularity of Web 2.0 sites employing technologies such as blogs, wikis, information tagging, and social networking sites, which include online community user generated content [1]. There is, however, uneven participation in the creation of user generated content within online communities. Nielsen estimates that only 1% of a community’s audience will be active contributors of content, and identifies a number of enablers and barriers to participation in online communities [2]. Personality has been shown to be an indicator of various types of online behavior [3], and it is suggested that personality traits could therefore influence the type and level of participation within online communities. In the absence of research specifically addressing this question, this study set out to seek answers to the following questions. Do personality traits influence how an individual participates in online community? Are certain personality traits indicative of particular behaviors within online community? If personality does influence how individuals behave online, are the relatively small number of individuals who are participating dominated by a particular personality trait?

1.1 The importance of online communities
According to Neilson/NetRatings user-generated content sites drove over half of the top 10 fastest growing websites in the US in 2006 [4]. As the popularity of online communities grows, interest from business and government agencies has also grown. Within e-government, public agencies are being encouraged to use communities and social software to provide a platform for citizen engagement in government process [5]. Two examples in New Zealand to date which show positive outcomes from the use of online consultation are the Police Act 2008 Wiki, which enabled citizen consultation in the wording of a revised Police Act [6], and a consultation process undertaken by the Bioethics Council whose report “Who gets born?” on pre birth testing, was based on a deliberative public dialogue, that was partly conducted within online discussion forums [7]. These examples suggest that there is an urgent need to better understand whether there is a particular type of person who participates in an online community, and if so, what this would mean to organizations and governments who might assume that online consultation draws in a ‘representative’ sample of their customers/citizens. Answers to these questions would surely impact on how future online community sites are built and managed.

1.2 Defining online communities
Communities have been defined as “groups of people who share common interests, beliefs and values and who interact in some mediated way.” [8]. Online communities can be defined similarly, with the added element that mediation is through an internet or intranet based online environment. As early as 1993 Rheingold defined an online community as a ‘technology supported self-organizing, social collective, created and sustained through the communication efforts of voluntary participants who are socially and geographically dispersed’ [9].

An important distinction can be made between individuals using computer mediated communication (CMC) as individuals, and those who use CMC to enable participation in an online community [10]. This is explained as a sociological distinction between Virtual Community and Virtual Settlement.
based on a “sense of community” among participants [11]. For a virtual settlement to be considered a virtual community a connection, or affective bonds between the members of the community must be identified. Using this definition, an individual’s social networking site is not considered an online community due to the fact that the only shared interest relates to having a profile on the site. While affective bonds may exist between individual members, this represents a network structure, rather than a cohesive community with a defined membership. There are however online communities that exist within the social networking sites, such as interest groups, or groups set up by a specific organization. Where membership of these sub groups is optional, presence alone within a social networking site is not considered as participation in an online community, unless other defining factors, outlined above, are present.

1.3. Levels of participation in communities

Research into participation in online communities is necessarily grounded in research into participation in communities which interact in the physical world, such as sports clubs, special interest groups and community groups. Wandersman’s 1981 model set out a framework of participation in face to face community organizations within four levels of activity: non participant; a member who attends meetings, comments and votes; a worker who joins committees and does work; a leader who defines goals and chooses tasks [12]. Blanchard and Markus [11] identify a continuum of participation running between two distinct levels of participation in online communities in their research on Windows Messenger Communities (MSN), the two extremes covering active participants who participate actively, by creating content, while passive participants lurk and read what the active participants have contributed. Wandersman’s earlier framework could thus be described as a continuum of activity from non and low activity through to active activity and decision making. Interestingly, non-participants are still considered part of the community, suggesting that those who voluntarily join a community organization, and perhaps identify a ‘sense of community’, do not need to participate in order to be considered part of that community.

This has interesting implications for online communities as to whether lurkers or non-participants are considered to be part of the community. Within an online environment, merely surfing to a web site and reading a movie review on the IMDB does not make them part of the community. However creating a user account, which implies voluntary and purposeful association, suggests that such an action could make an individual part of a community regardless of their subsequent level of participation. Some authors have in fact included silent participants in their definitions of online communities; those who read content but do not actively contribute [13]. Since this study is investigating the personality traits that influence participation in online communities, only active participants will be focused on. While it is expected that lurkers may be surveyed and important data gathered about them, the focus of the data will be to examine what influences types and levels of participation, rather than what influences non-participation.

1.4. Motivations and barriers to participating in online communities

Factors that influence participation in an online community have been identified as having a major impact on the success of an online community [14]. Neilsen’s 90:9:1 rule suggests that 90% of visitors to a list or forum will be passive readers of information, or lurkers, 9% will occasionally participate, and 1% will actively participate and contribute most of the content [2]. Thus practitioners and consultants alike encourage sites to build large community bases, or a ‘long tail’ to ensure that the number of active contributors to the community will remain significant [15]. The ongoing engagement of those who do actively participate may be influenced by the nature of their contribution, and the nature of others’ contributions. One study found that the only predictor of continued participation within the groups related to those individuals who posted questions, were likely to have those questions answered, and were subsequently more likely to continue participating. The use of positive or negative language did not appear to have any influence on ongoing participation [16]. Other research into the enablers to participation in online communities suggests a number of factors may interact to encourage participation. These include the participant’s belief that their contributions were unique or for the betterment of the community [17], the quality of content [18], and the responses a participant’s content receives, which have been shown to be a motivating factor to participation in a number of studies [13, 16, 19].

The main barriers to participation have been identified broadly as the volume of information within the community [18], usability aspects of the interface [14], and how the user generated content is mediated and responded to [20]. Both enablers and barriers to participation can be broadly divided into two main categories; human or technology. Human factors relate to the person, who is making, or not
making, the contribution. Factors noted above, such as simplicity of information and response [19]; friendship with community members [13]; a sense of belonging [13]; reassurance of unique contribution [17]; discovery of information for personal benefit [18]; and response after contribution [16]. Technology factors which relate to how the online community is set up or designed include usability [14] and structure (including mediation procedures) [20]. Many of these human factors can be identified as behaviors related to personality traits.

2. Personality and online behavior
2.1 The five factor model of personality

The personality literature emerged from the discipline of psychology in the 1930s when McDougall identified five distinguishable ‘factors’ of personality [21]. However, the five factor model or Big Five only became widely accepted after multiple empirical studies verified this classification of personality [22]. Described as the “basic dimensions of personality”, the five factor model has been robustly tested across languages and cultures [23] and has been found to be a reliable model for assessing personality traits and their impact on technology areas, such as internet use, and technology acceptance [3, 24].

The five factors are described as follows:

- **Agreeableness** represents the tendency to be sympathetic, good-natured, cooperative, and forgiving. Highly agreeable people help others and expect help in return.
- **Conscientiousness** represents the tendency to be self-disciplined, strong-willed, deliberate, and reliable. Conscientious people actively plan, organize, and carry out tasks.
- **Extraversion** represents sociability, cheerfulness, and optimism. Extraverts seek out new opportunities and excitement.
- **Neuroticism** represents a lack of psychological adjustment and emotional stability. Highly neurotic people tend to be fearful, sad, embarrassed, distrustful, and have difficulty managing stress.
- **Openness** to experience represents one’s curiosity and willingness to explore new ideas. Open individuals tend to devise novel ideas, hold unconventional values, and willingly question authority.[25]

The Neo Personality Tool, NEO-Pi-R and its shorter version the NEO-FFI, are licensed products developed by Costa and McCrae [25] and are considered to be the most validated of the five factor tools [26]. The NEO-Pi-R consists of a 240 item questionnaire, which measures six facets of each of the five domains or factors. The smaller NEO-FFI has 60 items and is designed to take 10-15 minutes compared with 45 minutes for the full version. The Big Five Inventory (BFI), developed by John, Donahue, and Kentle [27] with only 44 questions, is commonly used in research settings where subject time is at a premium, and is freely available for research purposes, provided appropriate referencing is given. It has been favorably compared with the NEO-FFI as a research tool [23].

2.2 Personality and behaviors online

A number of research studies have used the five factors model to investigate personality and online behavior such as internet use, virtual team interaction, perception of likeability online, and technology acceptance [3, 24, 28, 29, 30]. Devaraj et al [3] showed a strong relationship between personality, online behavior and technology acceptance and use, in particular that individuals who are high in agreeableness and conscientiousness traits are more likely to perceive the usefulness of new technology, while individuals high in neurotic traits are less likely to perceive the usefulness of new technologies. Tuten and Bosnjak [30] found that individuals who are high in neurotic traits had lower levels of activity on the web in general and were less likely to use the web to seek information while Landers & Lounsbury [28] found that individuals high in both agreeableness and conscientiousness traits spend less time online. Significantly, this study also found that individuals high in conscientiousness preferred to spend their online time in ‘academic pursuits’, or information sharing compared with entertainment sites. Thus there are clear indicators of a relationship between personality traits, the amount of time individuals spend online, and the type of content they seek. This suggests that similar factors may influence what activities the same individuals engage in when they participate in online communities.

The factors that motivate an individual to participate in online activities have also been shown to influence the nature of that activity. Amiel and Sargent [29] found that individuals high in extraversion were motivated to participate by a desire to voice an opinion and were generally more willing to share information online, in contrast to the behavior identified in individuals high in neurotic traits [28, 30]. The same study [29] also found that individuals high in neuroticism participated online to find a sense of belonging, although this is in contrast to Hamburger & Ben-Artizi [24] who argued from their research that individuals high in extraversion were generally less likely to participate in chat and
discussion sites. However it has been suggested that while these individuals generally spend less time online, when they do, they are more likely to interact purposefully, by sharing information. Hamburger & Ben-Artizi [24] also identified a gender split in behaviors online. Women high in neurotic traits were more likely to use the internet for participation in chat and discussion sites, by comparison to their male counterparts. This is the only research within the reviewed literature that identified a difference between particular personality traits and how they present in either men or women in relation to technology and internet use. However, there is independent research, for example, by Budaev [34], that the traits of agreeableness, as well as neuroticism are more prevalent in women, and may influence the behavior of women online.

Other studies in which personality traits have been shown to influence online behavior include McElroy et al [33], which showed that individuals high in openness were more willing and likely to try new technology, and research by Balthazard et. al. [31] and Byron & Baldridge [32] which found that personality traits influenced the level and perceptions of individuals using computer mediated communication (CMC), specifically that individuals displaying extraversion traits were more responsible for promoting activity within virtual teams than their non-extravert counterparts [31] and that individuals high in neurotic traits were more likely to perceive sender likeability as negative, while those displaying extraversion traits were more likely to perceive this as positive [32]. Both of these studies show how individuals with different personality traits may perceive or interact with their online community members, as online community communication is a form of CMC.

Some conclusions that can be drawn from the above are:

- **Agreeableness** – Individuals high in this trait will spend less time on the internet, but are more accepting of new technology. This could be seen as contradictory, however, perceived usefulness does not equate to high use.

- **Conscientiousness** – Individuals high in this trait will spend less time on the internet for ‘unproductive’ or leisure pursuits, but given that they are also more accepting of new technology if they conclude that a specific online activity is productive to their work/study it will be more readily perceived as useful and therefore they will contribute to the level of use.

- **Extraversion** – Individuals high in this trait will spend less time on the internet, but when they do, and when they contribute to online communities, are motivated to voice an opinion and are willing to share information. Less time is spent seeking social spaces online, but their presence in virtual teams encourages a high level of interaction. Extraverts are also more likely to perceive sender likeability as positive.

- **Neuroticism** – Individuals high in this trait will spend less time online in general, but when online, are more likely to use the internet to find a sense of belonging: women in particular are more likely to spend time on discussion boards and chat rooms but are less likely to play online games and exchange information. They are less likely to perceive the usefulness of new technology and are more likely to perceive sender likeability negatively.

- **Openness** – Individuals high in this trait more likely to be online in general.

2.3 The link between motivating factors and personality

Matching known motivating factors with personality traits online, there is evidence to suggest that personality does influence both the level and the type of participation in an online community. Thus by cross referencing the motivators and enablers of participation identified earlier, with the known behaviors of specific personality traits, we can generate a picture of how personality may influence participation in online communities, as in Table 1:

<table>
<thead>
<tr>
<th>Personality Trait</th>
<th>Known Behavior</th>
<th>Enabler to Participation</th>
</tr>
</thead>
<tbody>
<tr>
<td>1 Agreeableness</td>
<td>More likely to perceive usefulness of new technology [3]; ‘cooperative and forgiving nature’. [33]</td>
<td>Simplicity of information and responses [19]; Create simple interface for contribution[4]</td>
</tr>
<tr>
<td>2 Extraversion</td>
<td>More willing to share online [29]; Perceive sender likeability as positive [32]</td>
<td>Friendship within community members[13]</td>
</tr>
</tbody>
</table>
In summary, it is clear from the literature reviewed that there are human factors motivating individuals to participate on the Internet, and that when they do so, personality traits will affect their online behavior and how they communicate online. It is also clear that certain enablers and motivators will have more impact on some individuals than others. Given the increasing amount of user generated content on the internet through Web 2.0 technologies there is a need to extend this understanding, and to use this knowledge to help influence the way in which online communities engage with their participants in order to maximize participation and engagement.

### 3.0 Research propositions

Based on the literature reviewed it should be possible to anticipate certain behaviors by those with particular personality traits in online communities. If a sense of friendship within community members has a positive influence on participation in an online community, and if individuals high in extraversion are more likely to be motivated to share information and are also more likely to perceive sender likeability positively, it could be concluded that individuals high in extraversion may be motivated to contribute if they identify a sense of friendship within the community. Therefore Proposition 1 suggests that expected behaviors relating to individuals high in extraversion traits can be formulated as follows:

- **P1a.** Individuals high in extraversion will be under-represented in online communities.
- **P1b.** Individuals high in extraversion who contribute regularly will be more likely to identify a sense of friendship within the community.

Other enablers for participation are a sense of belonging, incentive for contribution, and response (after contribution). These enablers could help develop a sense of belonging and/or a sense of community, and therefore have more impact on individuals high in neurotic traits who seek acceptance in a community. If we accept that the enabler ‘sense of belonging’ is specific to individuals high in neurotic traits [13], and that women high in neurotic traits were more likely to use the internet for social networking, or to join a group [24], it could be concluded that women high in neurotic traits are motivated to participate in online communities by a ‘sense of belonging’. However, it has also been shown that individuals high in neurotic traits spend less time online [30]. Thus Proposition 2 suggests that expected behaviors relating to individuals high neurotic traits can be formulated as follows:

- **P2a.** Individuals high in neurotic traits will spend less time online.
- **P2b.** When individuals high in neurotic traits participate online they will be more likely to be motivated to participate by a sense of belonging.

Given that motivation to find out and contribute information for personal benefit is an enabler in online participation [18] and that individuals high in conscientiousness traits were less likely to spend time on ‘leisure activities’ and more likely to seek information for personal benefit [28] we can conclude that individuals displaying traits high in conscientiousness are more likely to contribute to an online community that has a specific purpose for gathering useful information, rather than opinion sharing sites. Thus, Proposition 3 suggests that expected behavior relating to individuals high in conscientiousness traits can be formulated as follows:

- **P3.** Individuals displaying high in conscientiousness traits will be more likely to be motivated by the sharing of useful information, than opinion sharing.

So far the propositions have been based on the singular presence of one of the five factor personality traits. While the literature reviewed did not uncover

<table>
<thead>
<tr>
<th></th>
<th>Neuroticism</th>
<th>Conscientiousness</th>
</tr>
</thead>
</table>

Table 1: Synthesis of enabling factors and personality trait
any studies looking at combinations of personality traits in relation to online behavior the following conclusions can be made. If individuals who posted questions were more likely to have those questions answered, then they were subsequently more likely to continue participating. Individuals high in conscientiousness traits would also be more likely to participate if they could identify a personal benefit, through either information seeking or asking questions of the community. This can be combined with what has been identified as the nature of individuals high in agreeableness, who, as has been shown by McElroy, are more likely to help others and expect help in return [33]. It therefore could be argued that individuals high in both conscientiousness and agreeableness are more likely to participate in information sharing sites, and will be motivated to find useful information. If on the other hand we know that individuals high in neurotic traits are seeking a sense of belonging and participate more if their posts are responded to, then they may be more likely to be asking questions of the community. It could therefore be argued that individuals high in both neurotic and agreeableness are more likely to participate by asking and responding to questions. Proposition 4 therefore suggests that expected behavior relating to individuals high in conscientiousness and agreeableness traits can be formulated as follows:

P4. Individuals high in both conscientiousness and agreeableness will be motivated to participate by a desire to find useful information.

Proposition 5 then suggests that expected behavior relating to individuals high in both neuroticism and agreeableness can be formulated as follows.

P5. Individuals high in both neurotic and agreeableness traits will be motivated to participate by a desire to ask and respond to questions.

To be able to conclude from the above review of the literature if one particular trait might be over represented in the small number of participants in an online community is difficult. While many of the enablers align with expected behaviors of individuals high in neurotic traits, some research suggests that individuals with neurotic traits spend less time online [30]. Furthermore many of the other enablers that encourage people to participate fit with the agreeableness trait, such as asking and responding to questions. Therefore taking into consideration Budaev’s assertion that agreeableness traits are higher in women [34], Proposition 6 argues that expected behavior of those who participate regularly can be formulated is as follows:

P6. Individuals who participate regularly in an online community will be high in agreeableness and be women.

4. Method

The research was conducted using an online survey. Participants were contacted through a number of online communities which met the definitions outlined in this paper, and were asked to respond to the survey with the community they spend most time with in mind. The invitation expressly focused on participants with a high level of engagement with an online community. The survey instrument was in three sections. The first section collected demographic data and asked which online communities the respondent participates in. Respondents were then asked to focus on this community and report on their level of participation, the activities they participate in, if they ask questions or like to answer questions, if they provide information or like to get information from the community, and if they get a sense of community and friendship online. The second section was a free text section that asked respondents to state why they choose to participate or not to participate. The third section was the 44 question BFI tool.

The BFI tool consists of a set of statements that follow the initial statement “I am a person who . . .” Participants were asked to respond using a 5 point Likert scale from “strongly agree” to “strongly disagree”. The tool is accompanied by a set of scoring instructions which indicate which statements contribute to which personality factors. The individual’s traits scores are compared with population norms, and the individual respondent is assigned a score which indicates which percentile the individual falls into for that particular trait. Individuals who score over the 60% percentile are considered to be displaying behaviors high in that particular trait. [29].

5. Findings

The online survey was available throughout September 2009, attracting a total of 82 valid responses. Respondents were predominantly women (68%); 66% were aged between 25-45 (see Table 2 below) and the majority (81%) were in full time employment.

<table>
<thead>
<tr>
<th>Age</th>
<th>% of Total</th>
<th>Numbers</th>
</tr>
</thead>
<tbody>
<tr>
<td>21-25</td>
<td>6.10%</td>
<td>(n=5)</td>
</tr>
<tr>
<td>26-30</td>
<td>14.63%</td>
<td>(n=12)</td>
</tr>
<tr>
<td>31-35</td>
<td>20.73%</td>
<td>(n=17)</td>
</tr>
</tbody>
</table>
5.1 Level of participation in online community

The respondents were asked how often they visited and how often they participated in their online community. While 82.93% (n=68) visited an online community site regularly (at least once a week) 51.22% (n=43) stated that they actively participated regularly (at least once a week) in this online community. Respondents indicated (by agreeing, or strongly agreeing) that their participation was motivated in the following ways.

<table>
<thead>
<tr>
<th>Motivator</th>
<th>Number</th>
<th>%age</th>
</tr>
</thead>
<tbody>
<tr>
<td>I like to ask questions</td>
<td>54</td>
<td>65.85%</td>
</tr>
<tr>
<td>I feel a sense of belonging</td>
<td>56</td>
<td>68.29%</td>
</tr>
<tr>
<td>I feel a sense of friendship</td>
<td>46</td>
<td>56.10%</td>
</tr>
<tr>
<td>I like to give my opinion</td>
<td>47</td>
<td>57.32%</td>
</tr>
<tr>
<td>I like to provide information</td>
<td>64</td>
<td>78.05%</td>
</tr>
<tr>
<td>I feel I get useful information</td>
<td>72</td>
<td>90.00%</td>
</tr>
</tbody>
</table>

The overwhelming majority of the respondents, 90% (n=73), agreed or strongly agreed that they go to online communities to find useful information. The results also show that all of the statements were agreed or strongly agreed to by over half of the sample. Interestingly, the lowest scoring statement was “I feel a sense of friendship”; just under half of all respondents did not agree, or had no feeling either way. This suggests that nearly half of all people who use online communities do not do so for the social friendship aspect.

Table 2. Full age breakdown of collected sample.

<table>
<thead>
<tr>
<th>Age Range</th>
<th>Percentage</th>
<th>n</th>
</tr>
</thead>
<tbody>
<tr>
<td>36-40</td>
<td>18.29%</td>
<td>15</td>
</tr>
<tr>
<td>41-45</td>
<td>13.41%</td>
<td>11</td>
</tr>
<tr>
<td>46-50</td>
<td>13.41%</td>
<td>11</td>
</tr>
<tr>
<td>51-55</td>
<td>7.32%</td>
<td>6</td>
</tr>
<tr>
<td>56-60</td>
<td>3.66%</td>
<td>3</td>
</tr>
<tr>
<td>61-65</td>
<td>2.44%</td>
<td>2</td>
</tr>
<tr>
<td>Total</td>
<td>n=82</td>
<td></td>
</tr>
</tbody>
</table>

Table 3. Respondents who agreed or strongly agreed that these statements described their motivation to participate. Total n=82

Table 4. Percentage of respondents who scored high in particular personality traits.

<table>
<thead>
<tr>
<th>Trait</th>
<th>% of total sample (n=82) scoring ‘high’ in this trait*</th>
</tr>
</thead>
<tbody>
<tr>
<td>Extraversion</td>
<td>23.17% (n=19)</td>
</tr>
<tr>
<td>Neuroticism</td>
<td>13.31% (n=11)</td>
</tr>
<tr>
<td>Conscientiousness</td>
<td>47.56% (n=39)</td>
</tr>
<tr>
<td>Agreeableness</td>
<td>45.12% (n=37)</td>
</tr>
<tr>
<td>Openness</td>
<td>43.90% (n=36)</td>
</tr>
</tbody>
</table>

* Any particular individual may present high in any number of individual traits, which means some individuals may present with no particular trait, while others may present with as many as four or all five.

It is expected that in any sample of the population most traits would be represented (i.e. at above the 60% percentile) in between 45% and 55% of the sample. In this sample extraversion and neuroticism are therefore under-represented.

5.2 Personality profile of respondents

The BFI measures personality across the five factor model, which represents a continuum of personality traits. Individuals scoring high in a particular trait are those that are higher than the medium spectrum across the entire population. Based on the scores that have been normalized by the creators of the BFI [27] the profile of the sample collected for this study is as follows.

Table 5. Notably, 75% of those individuals who stated they contribute in an online community to ‘help others’ were high in agreeableness. Of those individuals who stated that they did not contribute because of the low quality of the other posts or the tone of the conversation 80% were high in conscientiousness traits.

5.3 Qualitative results

The respondents were asked to comment on reasons why they would or would not participate in an online community. The responses were coded into a set of themes and sub-themes, as shown in Table 7. (Where a theme has a strong correlation with a particular personality trait, this is noted.) Many of these codes match up with the motivational factors asked about within the survey; however some important nuances also appear. Most of the survey respondents agreed that participation in an online community is to either share their own knowledge or to find out new information. While the qualitative analysis was able to dig deeper into factors affecting participation, most had no correlation with personality traits except for the two noted in the Table 5. Notably, 75% of those individuals who stated they contribute in an online community to ‘help others’ were high in agreeableness. Of those individuals who stated that they did not contribute because of the low quality of the other posts or the tone of the conversation 80% were high in conscientiousness traits.
Motivating factors | De-motivating Factors
---|---
Knowledge sharing (n=26) | Perceived value of contributions (n=4)
Wanting to contribute (n=3) | Nothing to say (n=1)
Help others (n=8) | Nothing unique to contribute (n=10)
(Of these respondents 75% high in agreeableness n=6) | No confidence in own contribution (n=6)
Information Seeking (n=17) | Quality/Nature of current posts (n=5)
Learning (n=7) | (Of these, respondents 80% high in conscientiousness, n=4)
Sense of Community (n=7) | Not enough time (n=8)
Support (n=1) | Privacy concerns (n=2)
Connectedness (n=2) | Technical problems (n=2)
Opinion giving (n=5) | Response to their post (n=6)
Friendship (n=4) | Gender issues (n=2)
Have to do so for work (n=3) |
Sense of belonging (n=3) |

Table 5. Codes from qualitative analysis of free text fields, with numbers of entries.

5.4 Testing expected behaviors

In relation to Proposition 1a, extraversion traits were found to be underrepresented in active participants in online communities in this study, those individuals making up only 23.17% (n=19) of the total sample. Of the individuals displaying extraversion traits who participated regularly (n=11) all agreed or strongly agreed that they found a sense of friendship in online communities. Therefore both expected behaviors relating to extraversion traits were found. However when the total sample is split between men and women it is discovered that men high in extraversion (n=4) are less likely to identify with a sense of friendship (25%, n=1), compared with women high in extraversion, 80% of whom (n=12) identified a sense of friendship as a motivator. So it could be concluded that the expected behavior outlined in Proposition1b (that individuals high in extraversion who contribute regularly will more likely identify a sense of friendship within the community) is more likely to be true for women high in extraversion, than men who are high in extraversion.

In relation to Proposition 2, there was an under representation of neurotic traits among the active participants in online communities in this study, participants strong in this trait making up only 13.31% (n=11) of the total sample. Of the individuals displaying neurotic traits who participated regularly (n=4) 75% (n=3) agreed or strongly agreed that they did so to find a sense of belonging. Therefore both expected behaviors relating to neurotic traits (these participants were predicted to spend less time online, but, when doing so will be motivated by a sense of belonging) were displayed (although the smallness of the sample suggest this is an unreliable finding).

Proposition 3 stated that individuals high in conscientiousness traits will be more likely to be motivated by sharing useful information than opinion sharing. Of the individuals in this study displaying high conscientiousness traits who participated regularly in an online community (n=14), 85% (n=12) feel they get useful information, while 71% (n=14) like to give their opinion. However as the first of these motivations is lower in this group of individuals than in the total sample (where 90% reported they feel they get useful information) and as the second motivation is higher in this group than in the total sample, (where 57.32 % reported that they like to give their opinion) it has to be concluded that this behavior for conscientiousness traits was not found at the level of the total sample. However when the sample is split between men and women, it emerges that of the women who participate regularly and who are high in conscientiousness traits (n=29), only 41.38% (n=12) were motivated to participate by opinion sharing, (compared with 57.32% in the total sample), while 68.97% like to provide information, and 86.21% feel they get useful information. In contrast, 80% of men who participate regularly and who display high conscientiousness traits are motivated by sharing their opinion. The motivation of this group of women to participate by finding useful information was almost the same as in the total sample at 86.21% (n=25). So we could conclude that women high in conscientiousness traits are more likely to exhibit the expected behavior, that is, more likely to be motivated by sharing of useful information, than opinions.

Turning to the propositions concerning individuals high in two or more traits, Proposition 4 predicted that individuals high in both
conscientiousness and agreeableness traits will be motivated by a desire to find useful information. However, the data shows that of the individuals high in both traits, 71% (n=7) agreed or strongly agreed that they get useful information from participating in their online community. As this figure is lower than the figure in the total sample for this motivator (at 90%) it is concluded that this expected behavior was not found. Due to the low representation of individuals in the sample presenting with the combination of both of traits the expected behavior in Proposition 5 (individuals displaying high in both neurotic and agreeableness traits will be motivated to participate by a desire to ask and respond to questions) was also not found.

Proposition 6, that individuals who participate regularly in an online community will be high in agreeableness and be women was partially supported. The total sample comprised 68% women and 32% men, which appears to support this expected behavior. However while 45.12% (n=37) of the total sample were high in agreeableness, of the women who participated regularly (n=28), only 46% (n=13) were high in agreeableness. Because of the ratio of women to men in the total sample it cannot be concluded that this behavior was found.

To summarize the above data therefore, we conclude:

Women who are high in
- extraversion traits are less likely to ask questions online.
- neurotic traits are less likely to ask questions, or seek friendship.
- agreeableness traits are less likely to provide opinions.
- conscientiousness traits are less likely to seek friendship or provide opinion.

Men who are high in
- extraversion traits are less likely to seek friendship.
- neurotic traits are less likely to provide opinion, or to provide information.
- agreeableness traits are less likely to seek friendship.
- conscientiousness traits are less likely to find a sense of belonging or to seek friendship
- openness traits are less likely to ask questions.

6. Discussion

The basic demographic data indicates some interesting things about the sample. The survey was specifically targeted at individuals who participated regularly in online communities. This is reflected in the proportion of respondents who stated they participated regularly (51.22%). This figure is twice as high as that found in research based on a sample more representative of the general population in the same country, [35], which found that only just over 25% of respondents were engaged in contributing content online. In this and other ways the findings correlate well with findings from the literature review, the majority of participants identifying positively with the motivators drawn from that literature. The fact that ‘sense of friendship’ was the lowest scoring motivator at 56.10% (n=46) is explained by the fact that positive responses to this statement were higher among individuals high in extraversion, but that these individuals are generally less likely to be active in online communities, in fact represent less than 25% of the sample. However, these respondents have a key role to play in online communities, since individuals high in extraversion have been shown to be beneficial in generating activity in computer moderated communication [31]. Despite being a minority, therefore, this group are valuable participants in the way that they encourage other users to take part.

The qualitative data concerning other motivational factors uncovered some interesting themes that had not been identified in the literature, in particular, the suggestion that individuals high in agreeableness identified with a motivation to ‘help others’ – although this is not a surprising discovery given that this is one of the identifying markers for the agreeableness trait [25]. The qualitative data also offered some interesting insight into barriers to participation, most notably the discovery that 80% of those individuals who indicated that the quality and nature of the other contributors’ posts was a barrier to their participation were high in conscientiousness. This can be explained by what is known of those high in conscientiousness traits, that they are self disciplined, deliberate and reliable [28]. It is perhaps logical to assume then that they would have little time for ‘time wasters’. This study also found that individuals high in conscientiousness traits were strongly motivated by a desire to find useful information; it stands to reason that if useful information is not to be had they would not bother participating. Moderating content to improve its usefulness could potentially lead to increased levels of participation by this group. A further contribution unique to this study was the difference in the motivators and barriers that impacted on men and women with the same personality trait. No previous studies were able to explain why women and men with the same personality trait will report different motivators to participation in an online community.
7. Conclusions
This research sought out to find out if personality traits influence the type and level of participation in online communities. Overall, the research has provided a certain amount of evidence that this is so. Those high in extraversion traits and those high in neuroticism were both under-represented in the sample, although neither of these groups dominated the participants with low rates of activity in their community. On the other hand, the fact that in this study, those high in extraversion traits seek a sense of friendship, those high in neurotic traits seek a sense of belonging, those high in conscientiousness traits are concerned about the quality/nature of posts, and those high in agreeableness traits are motivated by wanting to ‘help others’ demonstrates that personality traits are indeed indicative of the type of participation an individual will prefer. From this it follows that if a particular online community has a certain type or style of activity and communication, then this could mean that individuals high in a particular personality trait will be over or under-represented in its membership. As this survey went out to individuals who are involved in many different online communities, with varying purposes, further research into the impact of this in specific types of community would be required to fully explore this assertion.

7.1 Limitations to this project and suggestions for further research
The big five model and specifically the BFI tool used for this study has been shown to be a robust tool for measuring personality factors across many cultures and languages [23]. However in this study the survey did not ask for ethnicity or country of origin, so the study could not take this issue into account. The sample size, which resulted in extremely small numbers in some groups also negatively affects the generalisability of the findings. In addition, the scope of the project did not allow us to go into the intricacies of personality research in much depth. However, what the results of this study do prove is that there something worthy of further investigation. With the knowledge that personality types do influence the type and level of participation in online communities it would be beneficial to dig deeper, perhaps by studying a larger number of participants drawn from one particular online community, especially one focused on government consultation with citizens.

The cross over between online community and social networking also presented an interesting challenge for the research, with many participants offering views on social networking sites such as Facebook, as well as their online community. When the concept of an ‘online community’ was defined for the project, and for participants, there was a clear distinction made between the two concepts, however in reality individuals do not always appreciate this difference. Focusing on a specific online community may have got around this issue. What this research has highlighted, however, is the growing importance of online communities in people’s lives, and the need to better understand why and how they participate in them.

7.2 Implications for practice
This study has confirmed many of the assertions made in the growing literature on participation in online communities, by showing that there are a number of enablers and barriers to participation, and that these can be linked to specific personality traits. This has implications for online communities if they are to be seen as representative of the wider community, as in the case of e-government consultation sites, or consumer feedback sites. Moderation and oversight of user generated content can be used to both enhance the motivators to participation, and reduce barriers such as the quality and nature of posts. When using online communities to gauge public opinion, and engage citizens, owners and moderators need to ensure that there are options for engagement, and sufficient value in the content, to achieve a balance of views, ongoing vitality in the community, and increased participation levels.

8. References