

Cultural differences, experience with social networks and the nature of “true commitment” in Facebook

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Abstract

Formed on an analysis of design practices, the behaviour chain model stipulates that social network designer's ultimate aim is to encourage users to adopt the social network site by entering a phase of true commitment. During this phase, social network users are driven to connect to known or unknown others by engaging in instrumental uses that create value and content and involve others, while staying active and loyal by investing time in the site. This paper investigates how designer's intentions, as captured by the behaviour chain model, materialise through users' reported practices in the social network site Facebook. A total of 423 Facebook users from 5 countries answered a questionnaire that allowed us to examine how 2 user characteristics, *experience with the site*, and *culture*, shape the nature of true commitment. Our findings show that experience with the site and even more so, culture, have an effect on users' motivations for using Facebook, as well as their instrumental uses and the time they invest on the site. This analysis reifies the behaviour chain model by allowing designers to understand how the features they design are embodied in users' practices.

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1. Introduction

The growth and usage level of social network sites have become a global phenomenon. Cyworld is estimated to host profiles of 50% of the South Korean population (Kim and Yun, 2007). Mixi, Japan's most popular social networking site, has 14 million active accounts and is rated as the eighth most visited site in Japan¹. Orkut is the fifth most popular site in India²; within Orkut, 8.3 million profiles (20% of all users) are Indian³.

Social network sites typically share three common elements. They allow individuals to “construct a public or semi-public profile within a bounded system, articulate a list of other users

with whom they share a connection and view and traverse their list of connections and those made by others within the system” (boyd and Ellison, 2007). Despite their similarities, it has been argued that the design of social network sites varies in nuanced ways (boyd and Ellison, 2007). Subtle design distinctions from site to site, further compounded by the culturally homogeneous groups congregating certain social network sites (Hargittai, 2007), can influence users' motivations and uses, fostering different community cultures (boyd and Ellison, 2007; Hargittai, 2007).

This paper narrows its scope on the social network site Facebook. Initially targeted at US University users, Facebook opened its doors to high school students, followed by corporations. Since September 2006, the site has been open to everyone. Facebook⁴ statistics show that 400 million active visitors have joined the site on a global scale, 70% of which are located outside the US.

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¹Retrieved on 22/01/10 from <http://www.alexa.com/siteinfo/mixi.jp>

²Retrieved on 22/01/10 from <http://www.alexa.com/siteinfo/orkut.co.in>

³Retrieved on 12/02/10 from <http://www.orkut.com/MembersAll.aspx>

⁴Retrieved on 01/03/10 from <http://www.facebook.com/press/info.php?statistics>

By February 2010, Facebook had localised the site making it available in more than 70 languages, a move that reflects its growing international uptake.

A number of studies have demonstrated that the large-scale mobilisation in Facebook is sparked by the opportunity to connect and to communicate with people one has met or befriended offline (Joinson, 2008; Ellison et al., 2007; Golder et al., 2007; Lampe et al., 2006) and to a lesser degree by the ability to investigate new others (Joinson, 2008; Lampe et al., 2006; Ellison et al., 2007). Given the social character of Facebook users' motivations, it is not surprising that Facebook users, compared to non-users, place more value on social grooming i.e., a dispositional curiosity about others and a desire for social connection (Tufekci, 2008). At a collective level, the intensity of using Facebook to maintain offline ties leads to an increase of social capital within the offline community, a process that particularly benefits users with low self-esteem (Steinfeld et al., 2008; Ellison et al., 2007). A range of instrumental uses has been found to sustain users' motivation to keep coming back, such as posting photographs, using applications and changing the status update (Joinson, 2008).

The present research extends previous research on Facebook by using a novel, but not-yet empirically tested, framework, the "behaviour chain model" (Fogg and Eckles, 2007). The model was originally built to capture the range of behaviours, Web 2.0, and more specifically social network, designers strive to elicit in their users through their designs (Fogg and Iizawa, 2008). In brief, according to the behaviour chain model, users are initially guided to enter a phase of *discovery*, for instance, during which they learn about the site. Next, users are led into a phase of *superficial involvement* during which they may decide to try the service. Finally, users become situated in the *true commitment* phase, for example, expressed by involving others in their activities.

The authors of the behaviour chain model (Fogg and Eckles, 2007) do not present their work as an analytical model, but rather as a best-practices framework for designers. Nonetheless, we believe the behaviour chain model provides a useful framework for evaluating how designers' intentions materialise through users' actual practices; though designers' choices can successfully shape users' motivations and uses, it is also well known that users can interpret and appropriate the technology in unexpected ways (e.g. boyd and Heer, 2006). Using the behaviour chain model as a theoretical lens, this work examines whether the nature of the third phase, true commitment, is stable or rather shaped by users' *experience* and *culture*. In the next Section we review the behaviour chain model, present recent experimental findings in support of the model and position it within other related research on Facebook.

2. Relevant work

Aiming to capture the process designers undertake to motivate user participation, Fogg and Eckles (2007)

observed the design practices of 50 Web 2.0 applications (including several social network sites). This analysis led to the construction of a model, the behaviour chain, in which they argue that sites eliciting user-generated content are built around three phases. Each phase is characterised by several target behaviours that materialise through a number of instrumental uses. The first phase, discovery, aims to market the service provided by enticing users to learn about the site and to visit it. Once users sign up for the service they enter the second phase, superficial involvement. During this phase, the site highlights the possibilities for content creation and information exchange with others motivating users to try the service. The third phase, true commitment, is our present focus, as it signals users' full adoption of the service, in our case the social network site. It is characterised by three key target behaviours that follow a repetitive and cyclical pattern. These are: (1) creating value and content e.g. posting a photograph (2) staying active and loyal e.g. visiting the site frequently and (3) involving others e.g. sending a friend request. Fig. 1 presents the model as visualised by Fogg and Eckles (2007). To reify the behaviour chain model in the domain of social networks, Fogg and Iizawa (2008) illustrated how two diverse social network sites, Mixi and Facebook, facilitate the three target behaviours of true commitment by

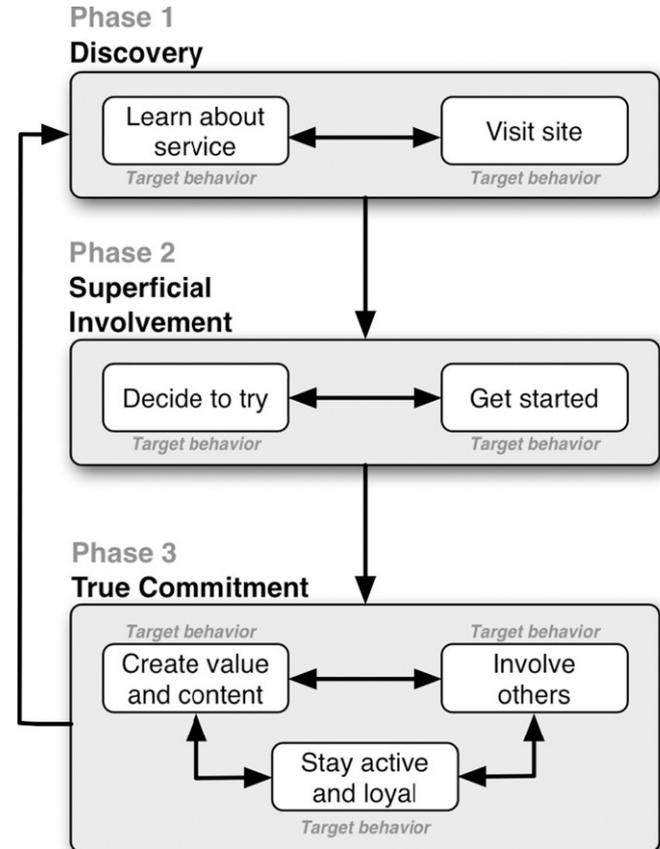


Fig. 1. Behaviour chain model (reprinted with permission from Fogg and Eckles, 2007).

encouraging a similar set of uses through their design features.

A recent study provides support for the applicability of the behaviour chain model by showing that users' reported Facebook uses are congruent with the three target behaviours delineated in the model (Joinson, 2008). Users created content and value through five main uses: (1) posting photographs, (2) playing games, (3) quizzes, (4) applications and (5) updating their status. They involved others or became involved by others with nine uses: (1) viewing photographs, (2) being tagged in photographs, (3) tagging photographs, (4) discovering applications because their friends had added them, (5) organising and joining events, (6) receiving a friend request (7) seeing what people had put as their status (8) using advanced search to look for specific types of people and (9) joining groups. Further, uses pertaining to photographs and status updates led users to visit Facebook more often, while applications increased the time users spent on the site. Therefore, as the behaviour chain model suggests, creating value and content and involving others led users to stay active and loyal, albeit in different ways.

The behaviour chain model has been formed from observation of real world design practises. It thus introduces a useful framework for bringing designers' objectives into the analysis of users' actual uses. Nonetheless, in order to be applicable to a range of Web 2.0 services, the model was intentionally constructed context-free. Therefore as a standalone perspective, it offers little insight on users' underlying social motivations for participating in Facebook, a topic that has been taken up by social scientists.

Lampe et al. (2006) studied the uses of Facebook amongst University students and identified two main uses: *social searching* (i.e. connecting or investigating offline contacts) and *social browsing* (i.e. seeking new contacts or connections). Social searching, i.e. the maintenance of social connections, was the most popular activity. These results were confirmed in several follow-up studies (Golder et al., 2007; Ellison et al., 2007; Joinson, 2008), including a longitudinal survey analysis conducted over a three-year period (Lampe et al., 2008). Moreover, Joinson (2008) found that social browsing was epitomised by the need to share one's identity with likeminded others, to investigate new people and to surf through the social network.

The present research focuses on the true commitment phase of the behaviour chain model. We use the model as an analytic framework to develop and test new research questions for Facebook. We examine the uses that characterise the target behaviours "create value and content" and "involve others" and the time investment that expresses the target behaviour "stay active and loyal". In light of model's limitations as described above, we further contextualise our investigation and relate it to previous work by additionally investigating users' motivations for participating in Facebook during the phase of true commitment. Section 3 formulates our research questions, which are addressed with a survey study in Section 4.

3. Research questions

The behaviour chain model defines the three target behaviours of true commitment in generic terms: social network designers set out to immerse users in what seems to be a static (as opposed to an evolving or maturing) state of true commitment (Fogg and Eckles, 2007). With few exceptions (e.g. Steinfield et al., 2008; Lampe et al., 2008), this view is also reflected in the design choices of experimental studies, which typically have not used users' length of participation in the site as an independent variable (e.g. Joinson, 2008; Lampe et al., 2006; Ellison et al., 2007; Lampe et al., 2007; Golder et al., 2007). The first aim of this paper is to examine whether Facebook users adopt stable motivations, uses and time investment, while in the phase of true commitment, or whether these evolve as users become more situated within the social network site.

RQ1a: Facebook users are chiefly motivated to use the site for social searching and to a lesser degree for social browsing (Lampe et al., 2006). Are these social motivations stable as users progress within the phase of true commitment?

RQ1b: Facebook users create value and content, involve others and, stay active and loyal through a number of instrumental uses and time investment in the site (Joinson, 2008). Are these target behaviours stable as users progress within the phase of true commitment?

According to the behaviour chain model, social network sites aim to encourage a particular pattern of behaviours. As a consequence, the features offered by different sites are often functionally similar (Fogg and Eckles, 2007; Fogg and Iizawa, 2008; boyd and Ellison, 2007). However, despite their shared similarities, recent examples in the popular media suggest that users' global uptake of social network sites is not universal. To give an illustrative example, Japanese users hesitate to join Facebook voicing concern about the conditions of identification the site imposes⁵. Hargittai (2007) substantiates this point by showing that the social network sites users choose are related to their ethnicity and race. While users' cultural affiliation may mobilise them towards or against a particular service, even when different cultural groups adopt the same social network site, their motivations, uses and time investment in the site cannot be assumed to be universal. So far, with few exceptions (e.g. Hargittai, 2007), the conclusions drawn from previous research have been primarily from American University users (Lampe et al., 2006; Ellison et al., 2007; Lampe et al., 2007; Golder et al., 2007; Buffardi and Campbell, 2008; Lampe et al., 2008; Lewis et al., 2008; Steinfield et al., 2008; Tufekci, 2008), a choice that reflects the original academically bounded use

⁵Retrieved from Fox News on 27/11/08 <http://www.foxnews.com/story/0,2933,439626,00.html>

Table 1
Participant demographics presented in percentages or in means (standard deviations).

| | US <i>N</i> = 72 | UK <i>N</i> = 67 | Italy <i>N</i> = 95 | Greece <i>N</i> = 108 | France <i>N</i> = 81 | Total |
|--|---------------------|---------------------|------------------------|--------------------------|-------------------------|--------------|
| Gender | | | | | | |
| Male (%) | 40.3 | 41.8 | 51 | 47.2 | 59.3 | 48.3 |
| Age | 29.14 (8.03) | 25.60 (7.46) | 27.16 (4.64) | 30.60 (4.88) | 26.46 (3.79) | 27.99 (6.05) |
| Occupation | | | | | | |
| University student (%) ^a | 27.8 | 50.7 | 36.5 | 19.5 | 27.2 | 31.1 |
| Working full time (%) | 65.3 | 38.8 | 44.8 | 64.8 | 64.2 | 56.1 |
| Working part time (%) | 4.2 | 4.5 | 12.5 | 6.5 | 3.7 | 6.6 |
| Other (retired, unemployed, not working) (%) | 2.7 | 6 | 6.2 | 9.2 | 4.9 | 6.2 |
| Education | | | | | | |
| High school (%) | 4.2 | 1.5 | 17.7 | 1.9 | 7.4 | 6.8 |
| Undergraduate (%) | 50 | 56.7 | 30.2 | 28.7 | 42 | 39.6 |
| Postgraduate (%) | 45.8 | 41.8 | 43.8 | 63.9 | 43.2 | 48.8 |
| Other (%) | 0 | 0 | 8.3 | | 5.5 | 7.4 |
| Living in country of origin (%) | 98.6 | 94 | 66.7 | 74.1 | 74.1 | 79.7 |

^aDue to low participant numbers in the part-time student category, full-time and part-time students were merged into one group.

of Facebook in the US. The second aim of the present study is to re-examine previous findings with a demographically diverse panel of University and non-University users from five different countries: the United States, the United Kingdom, Italy, Greece, and France. European countries were purposefully selected because of Facebook's recent high penetration in Europe⁶.

RQ2a: US Facebook users are chiefly motivated to use the site for social searching and to a lesser degree for social browsing (Lampe et al., 2006). Do European users share these two motivations?

RQ2b: US Facebook users create value and content, involve others and, stay active and loyal through a number of instrumental uses and time investment in the site (Joinson, 2008). Do European users follow the same patterns when expressing the three target behaviours?

4. Methods

4.1. Participants

The first method of recruitment was through postings on geographic-based 'walls' or networks within the Facebook site. The groups visited were chosen to reflect the different regions of each country⁷. The second method of recruitment was through snowball sampling. A group named 'Facebook Motivations Survey' was set up. Participants who took part in the experiment were in turn invited to

⁶Retrieved on 12/02/2010 from [http://www.comscore.com/Press_Events/Press_Releases/2009/4/Facebook_Top_Social_Network_in_Spain/\(language\)/eng-US](http://www.comscore.com/Press_Events/Press_Releases/2009/4/Facebook_Top_Social_Network_in_Spain/(language)/eng-US)

⁷Our recruitment method aimed to obtain a representative sample of each country. However, a limitation of our method was that regional information was not recorded.

sign up and to invite their friends to join the group. These two methods yielded 423 responses.

Participants were Facebook users over the age of 18, from the United States (*N* = 72), United Kingdom (*N* = 67), Italy (*N* = 95), Greece (*N* = 108), and France (*N* = 81). Participant demographics are presented in Table 1. Unlike the freshman University sample taking part in previous studies, participants were both University students and employed while the mean age tended to be older and more distributed than in previous studies.

4.2. Procedure

The study ran from March until May of 2008⁸. Using the methods described above, participants were invited to fill out an online survey. Given the diverse cultural groups participating in this study the questionnaires were provided in participants' respective languages. The questionnaire measure we used was originally developed in English. As commonly done in cross-cultural research, back-translation was conducted for the remaining languages i.e. Greek, Italian and French. Therefore, when participants first entered the survey, a choice menu prompted them to select their native language.

4.3. Measures

The questionnaire measure was organised in two parts. The first part collected general demographic information as presented in Table 1. We also asked participants to report their membership duration on Facebook and number of friends linked to their profile. This information is reported

⁸Facebook underwent a redesign in June 2008. This data was collected before the new changes took place.

Table 2
Facebook membership duration and number of friends.

| | Participant percentage (%) | Mean number of friends |
|------------------------------------|----------------------------|------------------------|
| Less than one month | 5.2 | 26 |
| More than one but under two months | 4 | 42 |
| Between two and six months | 29.1 | 47 |
| Between six months and one year | 29.6 | 98 |
| More than one year, less than two | 22.2 | 165 |
| More than two years | 9.9 | 355 |

in Table 2. The second part measured users' motivations, uses and time investment in Facebook.

We measured the two motivations for using Facebook (social browsing and social searching) and the uses expressing the two target behaviours of true commitment ("create value and content" and "involve others") by repurposing items from a measure originally developed to understand the uses and gratifications of Facebook (Joinson, 2008). This previous research asked 137 Facebook users to list "why" and "how" they use Facebook in an open-response format. This process led to the development of a 28-item questionnaire, later subjected to principle component analysis (PCA) to reveal the chief uses and gratifications driving participation in Facebook. The present research is motivated by a different theoretical framework and research questions. Nonetheless, the exploratory approach taken to construct the 28-item questionnaire ensured that a wide spectrum of motivations and uses of Facebook were captured and thus made it suitable for our purposes.

We surveyed the original 28 items and retained 24 that mapped to users' motivations and the uses characterising the two target behaviours of true commitment⁹. Participants were asked to rate the importance of each item on a scale of 1 (very unimportant) to 7 (very important). To reduce the 24 items to scales, PCA was conducted. The sampling adequacy was verified with the Kaiser–Meyer–Olkin measure (KMO = 0.85). Bartlett's test of sphericity $\chi^2(276) = 47760$, $p < 0.001$, was significant confirming that correlations between items were sufficiently large for PCA. Six components had eigenvalues above Kaiser's criterion of 1 explaining 67% of the variance. Previous analysis on these items found that components were correlated (Joinson, 2008) and thus theoretically linked. For this reason, oblique rotation was used to rotate the six factors to simple structure. Both pattern and structure matrices were examined and two criteria were used to retain items as markers for each component: items' loading was more than 0.4 and they were twice the value of the next highest

⁹Four items did not correspond to our theoretical framework. For example, *communication with likeminded others* might refer to either social browsing and social searching.

Table 3
Scales for motivations and uses presented in means (standard deviations).

| | |
|---|--------------------|
| Social searching (Cronbach's alpha: 0.89) | 5.41 (1.3) |
| Finding out what old friends are doing now | 5.20 (1.71) |
| Reconnecting with people you have lost contact with | 5.52 (1.56) |
| Maintaining relationships with people you may not get to see very often | 5.58 (1.61) |
| Connecting with people you otherwise would have lost contact with | 5.52 (1.56) |
| Finding people you have not seen for a while | 5.21 (1.59) |
| Contacting friends who are away from home | 5.44 (1.69) |
| Social browsing (Cronbach's alpha: 0.78) | 2.77 (1.24) |
| Viewing other people's friends | 3.22 (1.69) |
| Looking at the profiles of people you do not know | 2.31 (1.52) |
| Browsing your friends' friends | 3.35 (1.72) |
| Using advanced search to look for specific types of people | 2.68 (1.90) |
| Meeting new people | 2.33 (1.67) |
| Groups (Cronbach's alpha: 0.65) | 3.13 (1.53) |
| Joining groups | 3.16 (1.71) |
| Organising or joining events | 3.12 (1.85) |
| Games and applications (Cronbach's alpha: 0.80) | 2.44 (1.27) |
| Quizzes | 2.36 (1.57) |
| Playing games | 2.51 (1.71) |
| Discovering apps because you see friends have added them | 2.38 (1.55) |
| Applications within Facebook | 2.51 (1.53) |
| Status updates (Cronbach's alpha: 0.80) | 3.00 (1.49) |
| Updating your own status | 2.81 (1.66) |
| Seeing what people have put as their status | 3.20 (1.72) |
| Photographs (Cronbach's alpha: 0.83) | 3.86 (1.53) |
| Tagging photos | 2.88 (1.82) |
| Viewing photos | 4.62 (1.84) |
| Being tagged in photos | 3.33 (1.86) |
| Sharing/posting photographs | 4.62 (1.96) |

Table 4
Items for time investment presented in percentages.

| | |
|--|-------|
| Frequency of visits on Facebook | |
| (1) More than once daily | 29.5% |
| (2) Once daily | 24.1% |
| (3) Several times a week | 19.3% |
| (4) Once a week | 12% |
| (5) Less than weekly, but more than once a month | 10.6% |
| (6) Once a month | 3.8% |
| Hours per week on Facebook | |
| (1) Less than 1 h | 38% |
| (2) Between 1 and 2 h | 26.7% |
| (3) Between 2 and 5 h | 19.6% |
| (4) Between 5 and 10 h | 9.2% |
| (5) Between 10 and 15 h | 3.3% |
| (6) More than 15 h | 1.4% |

loading (e.g. Buchanan et al., 2006). This process led to the exclusion of one item.

Two factors emerged whose items correspond to the motivations of social searching and social browsing. Items that represented the instrumental uses for creating value and content and involving others grouped thematically by feature type and were labelled accordingly: groups, games and applications, status updates and photographs. There-

Table 5
Motivations and uses presented in means (standard deviations) and time investment presented by the median (interquartile range)* experience of use.

| | Early users – between two to six months N = 123 | Intermediate users – between six months and one year N = 123 | Advanced users – more than one year and less than two N = 94 | Sig. |
|---------------------------------|---|--|--|-------|
| Social searching | 5.42 (1.20) | 5.45 (1.20) | 5.55 (1.22) | 0.355 |
| Social browsing | 2.88 (1.11) | 2.61 (1.26) | 2.64 (1.11) | 0.102 |
| Groups | 2.76 (1.43) | 3.13 (1.56) | 3.29 (1.41) | 0.546 |
| Games and applications | 2.63 (1.30) | 2.52 (1.32) | 2.09 (1.07) | 0.049 |
| Status updates | 2.68 (1.26) | 3.00 (1.56) | 3.25 (1.47) | 0.388 |
| Photographs | 3.40 (1.42) | 3.85 (1.48) | 4.27 (1.63) | 0.014 |
| Frequency of visits on Facebook | Several times a week (2) | Once daily (2) | Once daily (2) | 0.157 |
| Hours per week on Facebook | Between 1 and 2 h (2) | Between 1 and 2 h (2) | Between 1 and 2 h (2) | 0.171 |

fore, the two target behaviours “create value and content” and “involve others” are aggregated by type. Table 3 displays participants’ mean responses for the scales and their items.

The target behaviour “stay active and loyal” was measured by asking participants how often they visit Facebook and how many hours they spend weekly on Facebook. Table 4 presents the two items and the distribution of responses.

5. Results

5.1. Research question 1a and 1b

Gaining experience comes with time¹⁰ as user’s exposure to the site increases. The variable “membership duration” captured this progress; participants had been on Facebook as little as one month to over two years. Given our focus on the true commitment stage, participants who were Facebook users for less than two months were omitted from the analysis as they likely belonged to the superficial involvement stage. Three levels of membership duration had sufficient numbers of participants that allowed us to conduct a meaningful comparative analysis (see Table 2). Therefore, the time window of experience that we focused on was between two months and less than two years (see Table 5).

Previous studies of social networks have shown that individual differences can influence usage patterns (Burke et al., 2009; Hargittai, 2007). Parametric tests were chosen to control the influence of age, gender, occupation and country of origin. For all analyses, we checked that the conditions of application were respected using residuals analyses (residuals vs. fit and Cook’s distance).

A MANCOVA was calculated with the three levels of membership duration as the independent variable. The six scales for motivations and uses and the two items for time commitment were the dependent variables. Age, gender,

¹⁰We acknowledge that time may enable other social mechanisms e.g. social learning that in consequence lead to higher usage (Burke et al., 2009).

occupation and country were covariates. The main effects appear in Table 5.

Research question 1a asked whether social searching and social browsing equally motivate the participation of new and advanced Facebook users. As Table 5 demonstrates, no significant differences were found in either social searching or social browsing. The higher means in social searching compared to social browsing show that overall, maintaining offline ties is the chief motivation for visiting Facebook for users of all stages.

Research question 1b aimed to capture whether the three target behaviours, “create value and content”, “involve others” and “stay active and loyal”, are stable as users progress in the phase of true commitment. The analysis revealed two significant differences. There was a significant linear trend for games and applications ($F(2, 329) = 3.052$; $p < 0.05$); pair-wise comparisons between the three levels showed that early users compared to advanced users reported higher importance ratings for this scale ($p < 0.05$, $d = 0.45$). A significant linear trend was also shown for photographs ($F(2, 329) = 4.32$; $p < 0.01$). Pair-wise comparisons found that photographs were less important to early users compared to intermediate ($p = 0.068$, $d = 0.31$) and advanced users ($p < 0.05$, $d = 0.56$).

5.2. Research question 2a and 2b

A second MANCOVA was performed: country (US, UK, Italy, Greece, France) was the independent variable, the six scales for motivations and uses and two items for time commitment were the dependent variables. The covariates entered were age, gender, occupation and membership duration. To examine whether previous insights drawn on the basis of US users apply to this cross-cultural sample, the approach we take is to perform planned contrasts by assigning US as the reference category. To address our research questions we describe the planned contrasts only and report the main effects in Table 6.

Research question 2a set out to answer whether European users, like US users, were motivated by social searching and social browsing. Compared to US

Table 6

Motivations and uses presented in means (standard deviations) and time investment presented by the median (interquartile range) * culture^a.

| | US | UK | Italy | Greece | France | Sig. |
|---------------------------------|-----------------------|--------------------------|-----------------------|--------------------------|--------------------------|-------|
| | N = 71 | N = 66 | N = 95 | N = 108 | N = 81 | |
| Social searching | 5.37 (1.22) | 5.29 (1.18) | 5.64 (1.11) | 5.42 (1.26) | 5.43(1.23) | 0.312 |
| Social browsing | 2.53 (.97) | 2.33 (1.05) | 3.10 (1.29) | 2.53 (1.10) | 3.12 (1.20) | 0.001 |
| Groups | 2.81 (1.47) | 3.59 (1.46) | 3.85 (1.43) | 2.77 (1.39) | 2.63 (1.43) | 0.001 |
| Games and applications | 2.21 (1.17) | 2.05 (1.06) | 2.89 (1.29) | 2.55 (1.23) | 2.19 (1.18) | 0.01 |
| Status updates | 3.57 (1.41) | 3.56 (1.37) | 3.03 (1.39) | 2.60 (1.36) | 2.38 (1.27) | 0.001 |
| Photographs | 4.00 (1.58) | 4.47 (1.59) | 4.11 (1.36) | 3.58 (1.50) | 3.25 (1.40) | 0.001 |
| Frequency of visits on Facebook | Once daily (3) | More than once daily (2) | Once daily (2) | Several times a week (2) | Several times a week (3) | 0.001 |
| Hours per week on Facebook | Between 1 and 2 h (2) | Between 2 and 5 h (2) | Between 1 and 2 h (2) | Between 1 and 2 h (2) | Less than 1 h (1) | 0.001 |

^aTwo participants had missing data and were omitted from the analysis.

participants, Italian ($F(4, 411) = 6.17; p < 0.05, d = 0.5$) and French ($F(4, 411) = 6.17; p < .05, d = 0.54$) participants reported social browsing to be more important. Nonetheless, comparing the mean ratings for social searching to those of social browsing, the former seems to be the dominant motivation for using Facebook across all countries.

Research question 2b examined whether European users' uses and time investment for creating value and content, involving others and, staying loyal and active were analogous to the practices of US users. Compared to their US counterparts, groups were more important for participants coming from the UK ($F(4, 411) = 10.35; p < 0.05, d = 0.53$) and Italy ($F(4, 411) = 10.35; p < 0.001, d = 0.7$) and games and applications were more important for Italian participants only ($F(4, 411) = 4.41; p < 0.01, d = 0.55$). The opposite pattern of results was observed for the status updates and photographs features; when contrasted to participants from the US, both Greek ($F(4, 411) = 11.22; p < 0.001, d = 0.7$) and French ($F(4, 411) = 11.22; p < 0.001, d = 0.89$) participants rated status updates as less important while French participants also assigned less importance to photographs ($F(4, 411) = 5.26; p < 0.05, d = 0.5$). The patterns reported for the time invested on Facebook were also diverse. Compared to US participants, participants from the UK spent more hours per week on Facebook ($F(4, 411) = 5.03; p < 0.01, d = 0.46$) and those from France visited the site less frequently ($F(4, 411) = 9.50; p < 0.001, d = 0.24$).

6. Discussion

How do social network designers motivate users to create content and to keep coming back to the site? The behaviour chain model aims to answer this question by analysing designers' practises (Fogg and Eckles, 2007). This analysis reveals that social network designers' ultimate goal is to foster a sense of true commitment in their users. True commitment is signalled when users engage in three target

behaviours: "create value and content", "involve others" and "stay active and loyal". Users create value and content and involve others by using various features offered within the site. To give an example, posting photographs creates value and content whereas tagging photographs involves others. Further, users stay active and loyal by investing time in the site, for instance, by visiting the site frequently.

The behaviour chain model offers a window into social network designers' intentions. However, it does not provide insights on how users respond to these design tactics. This paper examined Facebook users' reported behaviours to determine whether the intentions of social network designers are accomplished. In particular, our first aim was to answer whether the uses and time investment characterising the three target behaviours, as well as users' overarching motivations for taking up Facebook, are stable or if they evolve over time. Our second aim was to examine whether users' target behaviours and motivations are universal or if there are cross-cultural differences that shape users' involvement in the phase of true commitment. To answer these questions, we surveyed a diverse panel of Facebook users including users of variable membership duration, University and non-University users, distributed in five different countries: the US, UK, Italy, Greece and France.

6.1. Experience of use

Social searching (i.e. seeking out offline contacts) and social browsing (i.e. seeking out new contacts) were equally important to new as well as more experienced Facebook users. Therefore, the same fundamental motivations drive participation at different time points of the true commitment phase. Moreover, the balance between these social motivations was tilted towards social searching; social browsing was not the dominant activity. We replicate the results of Lampe et al. (2006) who based their analysis on a survey of 2000 US-based undergraduates. Compared to this previous study, our user panel was demographically diverse, thus bolstering their conclusion.

This result also has implications at an operational level. The failure of social network site Friendster has been partly attributed to a clash between users, who were motivated by designers to engage in social searching and users whose purposes were playful and took up social browsing (boyd and Heer, 2006). Facebook markets itself as a social utility that connects users to their offline social networks. Our study verifies that this branding strategy has been overall successful, a factor that may contribute to the continued acceptance of the site.

Unlike the analysis of users' motivations, when examining the uses and time investment expressing the three target behaviours of true commitment, some differences emerged: while the time investment characterising the target behaviour "stay active and loyal" showed no differences, users situated in different stages of experience took slightly different approaches to "create value and content" and to "involve others". Compared to users who had been on Facebook more than a year, less experienced users judged the interactive components offered within the site, e.g. playing games, as more important. However, the longer users were on Facebook, the less important games and applications became and photographs gained importance instead.

Burke et al. (2009) found that social learning shaped new Facebook users' content sharing uses; users monitored their friends' photo activities through the news feed, a mechanism that led them to post more photographs themselves. Further, the effect of social learning was not limited to photographs but also extended to other types of uses e.g. joining groups. In the present study, the process of social learning was represented in both scales for games and applications and photographs through items such as *discovering applications because you see your friends have added them* or *viewing photos*. Therefore, although the news feed gave prominence to a wide range of uses, it appears that less experienced users deliberately chose to express themselves through game play. In adding games and applications that others are using, these users may fulfil their need for social searching by forging common ground with those in their social network. Games and applications may also offer an opportunity for sociability centred on player's performance (Stenros et al., 2009). The decline of importance in games and applications may result from users' familiarisation with more prevalent norms of identity expression supported through photographs.

Livingstone (2008) observed that even though younger teenagers took an egocentric approach to self-expression in social network sites, as they matured, their identity was gradually enacted through their social connection with others. Photographs are ideal candidates for the expression or co-construction of social identity. Their visual modality and built-in feedback channels (e.g. tagging, commenting) can explicitly involve users' social group. Contrary to Livingstone's conclusions, an alternative explanation for the raising importance of photographs may be their role in the expression of narcissism (Buffardi and Campbell, 2008). Individuals scoring high on narcissism recruited

more friends in their social network and elicited more messages from them compared to those scoring low on narcissism. As narcissists expose their high-accrued number of friends to their self-promotion strategies, Buffardi and Campbell (2008) have proposed that self-promotion might eventually become the prevailing norm of self-expression in social network sites. The growing importance of the photographs feature for Facebook users, followed by questions pertaining to its value, can motivate future research to investigate the balance between these possibly competing goals of identity.

It has been shown that over time Facebook users' friend networks (represented by number of friends) and photo networks (represented by incoming and outgoing tagged photos) grow while "betweenness centrality" (represented by the number of shortest paths between all pairs of users) increases (Lewis et al., 2008). Burke et al. (2009) suggests that it is not the network size that shapes what users do but the actions of their friends. Our data suggests, however, that social learning might be a mechanism moderated by users' experience with the social network site. We cannot rule out that the cumulative exposure to photographs that results from a larger network contributes to the lowering of initial inhibitions, reinforcing their use as an acceptable medium for self-expression.

To relate these findings back to our original framework, the behaviour chain model, we found that even though users of variable experience share a common thread of uses and invest similar amounts of time on the site, the nature of creating content and value and involving others is also dynamic. Despite the fact that users are driven to Facebook by the same fundamental motivations at early and later stages of use, the features they take up to cultivate social connection can vary. Social network sites must continue to cater to the evolution of a user's identity by introducing users to known interactions and paradigms, creating the "neutral ground" that will allow them to gain experience in the mechanics of identity expression.

6.2. Culture

No differences were found between the US and the four countries for the measure of social searching. In contrast, compared to US users, social browsing was more important for French and Italian users. When comparing the means for social searching to those for social browsing, despite these cross-cultural differences, social searching still remains the most important motivation for using Facebook. Nonetheless, these results suggest that as more countries sign on to Facebook, the influence of social learning may nurture a new desire for social browsing, displacing the importance of social searching. Recent design changes in the operation of the privacy settings¹¹ have allowed Facebook users to unwittingly share

¹¹Retrieved on 22/01/10 from <http://www.guardian.co.uk/technology/2009/dec/10/facebook-privacy>

information with people outside their social network. The interest for social browsing in some countries may be accelerated by these changes.

Several cross-cultural differences were identified when examining the three target behaviours of true commitment. We summarise the results by focusing on each country individually. Compared to users from the US, participants from the UK rated groups as more important. The same group of people spent more hours per week on Facebook. For Italian users, groups and games and applications were more important than for US users while Greek users found status updates less important. When compared to US users, status updates and photographs were less important for French users, who also visited the site less frequently. In general, the smallest differences existed between Greece and the US. Conversely, the largest differences were between US users and UK, French and Italian users.

Social learning can explain our results by predicting that the five countries assigned importance to behaviours they observed in their in-group¹². Lewis et al. (2008) found that ethno-racial students, e.g., Asian, Black, Latino, compared to white students, had increasingly diverse social networks in Facebook. From a social learning perspective, it can be argued that users who belonged to culturally homogeneous social networks exhibited in turn more distinctive behavioural patterns compared to users of diverse networks who might have been exposed to a diffused range of uses. Future work can investigate this possibility by additionally measuring the homogeneity of users' social network for each country. Following from these findings follow-up research could also examine the impact of cultural incongruence in uses on subsequent activity in the social network. For instance, does an American user form a negative impression of an Italian friend after repeatedly receiving application invitations and does this influence his later participation in the social network?

Given that French and Italian users tended to visit the site for social browsing, it is possible that this motivation in part fuelled the differences exposed in these countries. Italian users may have found games and applications and groups more useful for meeting new friends. Photographs and status updates may have been less useful for supporting social browsing, thus declining in importance for French users, an event that led to less frequent visits to the site. As discussed earlier, however, the extent to which these results remain stable over time may depend on these users' ability to easily access previously private profiles. This point merits further investigation as to our knowledge previous research has not linked users' social motivations when visiting Facebook to subsequent instrumental uses and time investment.

¹²We note that social learning cannot explain the cause of these cross-cultural differences. The field of cross-cultural psychology has focused much of its theoretical development on comparisons between the East and the West (e.g. Kitayama et al., 1997; Brown et al., 2009; Yuki, 2003).

Revisiting our framework, the behaviour chain model, we found that even though users had to their disposal the same set of features, the uses for creating content and value, and involving others and the time investment for staying active and loyal in the site differed across countries. For social network designers, the need for localisation for the entire gamut of uses within the site is underscored and a new challenge is highlighted; designers cannot assume that their features share universal value.

Finally, one of the key implications of this work was the demonstration that even more so than experience of use, culture is a key behavioural determinant. Increasingly, social network sites continue to reach out to new diverse user populations. Researchers of social network sites should begin to engage with how cross-cultural differences shape the use of technology.

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