Social Bits: Personality & learning-style profiling via the social web

January 10, 2014 Kostas Mavropalias

This is an overview of the study conducted by Kostas Mavropalias (researcher) & Ellen Brady (supervisor) that was published in the book 'Cyberpsychology and New Media'.

Modern adaptive e-learning applications take advantage of technological and pedagogical breakthroughs to identify the preferences and personality characteristics of their students and adapt the learning experience towards the needs of the individual.

An adapted learning experience, customized to the personality, learning style and preferences of each student, can have a positive effect on the user experience, engagement levels and, crucially, the learning outcome. This is typically done by assessing a number of metrics and characteristics of the individual to create a user model, and consequently adapting the learning material that each student is provided with. The student's personality and learning style are two important facets used in such learning systems.

In developing user models, two techniques have been predominately used to identify learning styles and personality characteristics: questionnaires and ongoing behavior and performance monitoring. The problem is that both techniques have significant drawbacks. Questionnaires must be completed in advance of a student using an e-learning app and can only provide useful data from a single point in time. On the other hand, behavior and performance monitoring occurs transparently, during the learning process, but it can be slow to produce actionable results.

The ideal way would be to gather the data without annoying the student and with no delays, in order to provide instant personalization. The problem is really a matter of collecting – or finding a source that will provide – reliable data about the student.

The Social Web can be a source of rich and up-to-date user data. In their everyday lives, people discover new things, communicate, interact and visit new places. A good deal of all that activity is reflected in their online social profiles, where they share much of what goes on in their lives.

In Facebook alone, people create more than 30 billion pieces of content each month. Twitter users post hundreds of millions of tweets every single day. And, of course, there are hundreds of other Social Networking Sites (SNS) where people engage with each other and share content.

The study hypothesizes that the things people share online have a meaning to them and can even describe and define aspects of their personalities and learning styles. The study defines *Social Bits* as "activity, information & content shared online by people".

When it comes to measures of personality factors and the social web, no research outside of Facebook exists to-date. Moreover, only a few studies so far have shed light on how personality factors relate with the way people use Facebook.

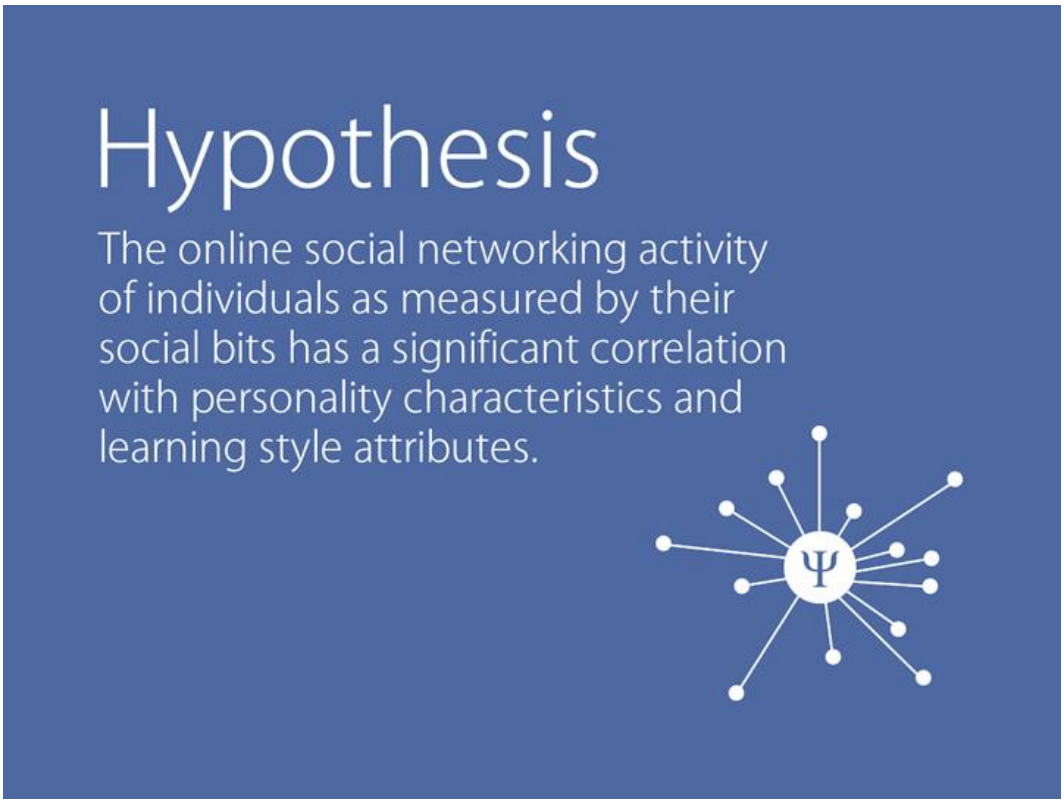
These studies produced some very interesting findings, linking people's true personalities with their online profiles and the way they behave in social networks.

However, studies on the social web have been limited in certain aspects, such as only using homogeneous samples (for example, only female participants), using self-reports to collect data, or only focusing on one social network at a time, limiting the level to which these results can be extrapolated.

The present study aimed for a more fine-grained analysis of multiple Facebook aspects, while at the same time incorporating data from other social networks, in order to produce a more complete profile of people that use such sites.

Specifically, the study's main hypothesis was:

"The online social networking activity of individuals as measured by their social bits has a significant correlation with personality characteristics and learning style attributes."



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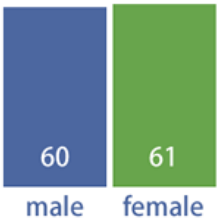
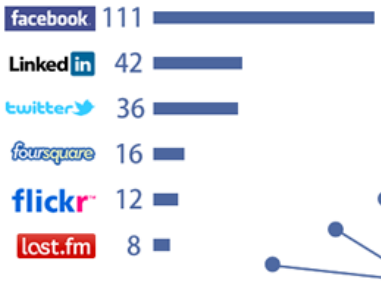
Participants

121 people, 21 countries



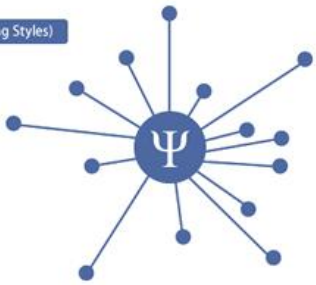


Measures

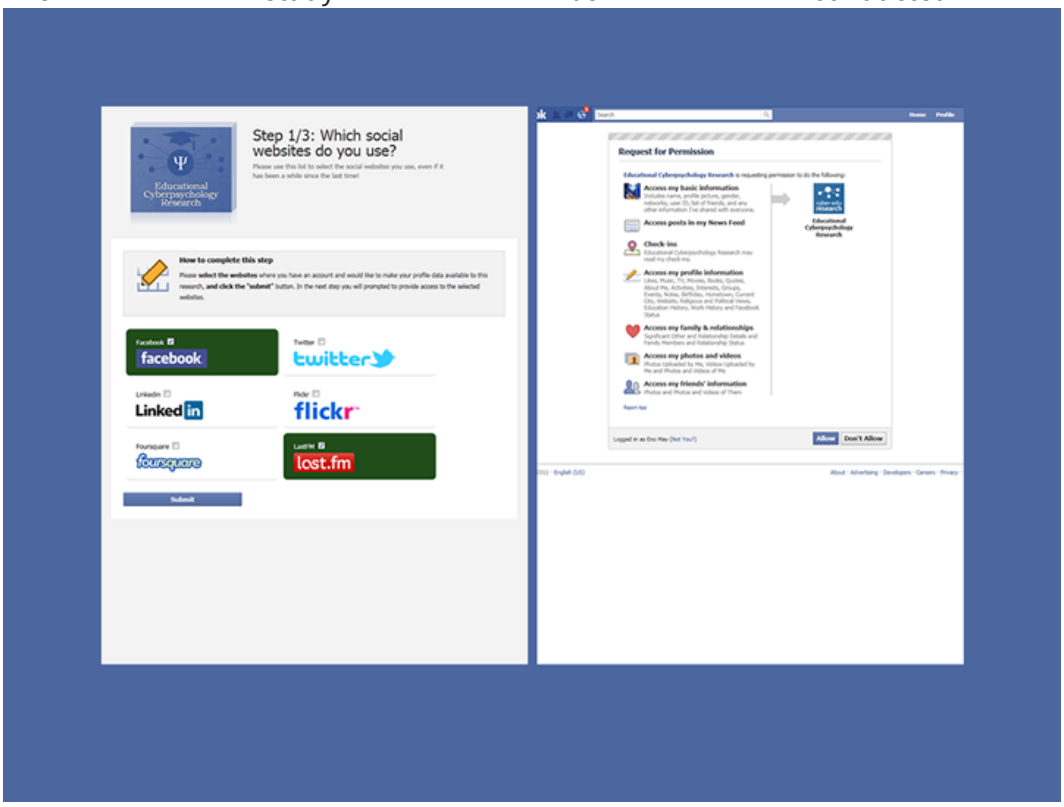
2 tests

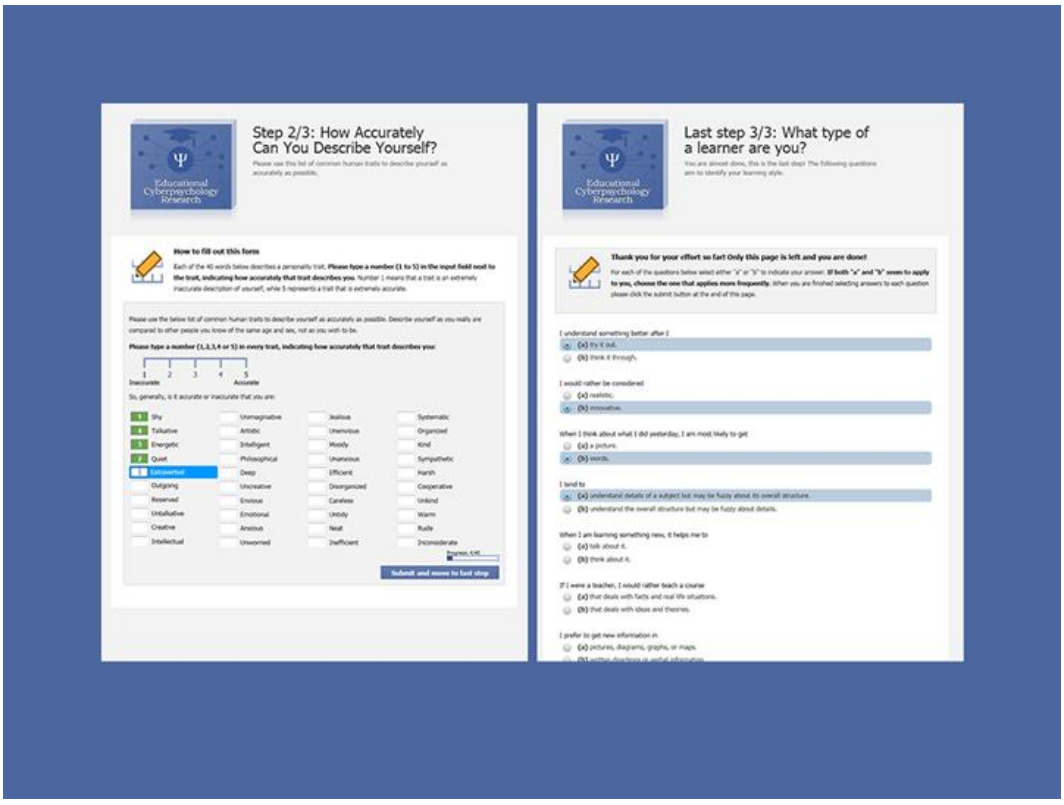
personality test
... using English Mini-Markers scale (Thompson, 2008)
... to measure Big-Five factors of personality (Goldberg, 1999)

learning style test
... using Index of Learning Styles (ILS) (Index of Learning Styles)
... to measure learning inclinations on four dimensions of learning



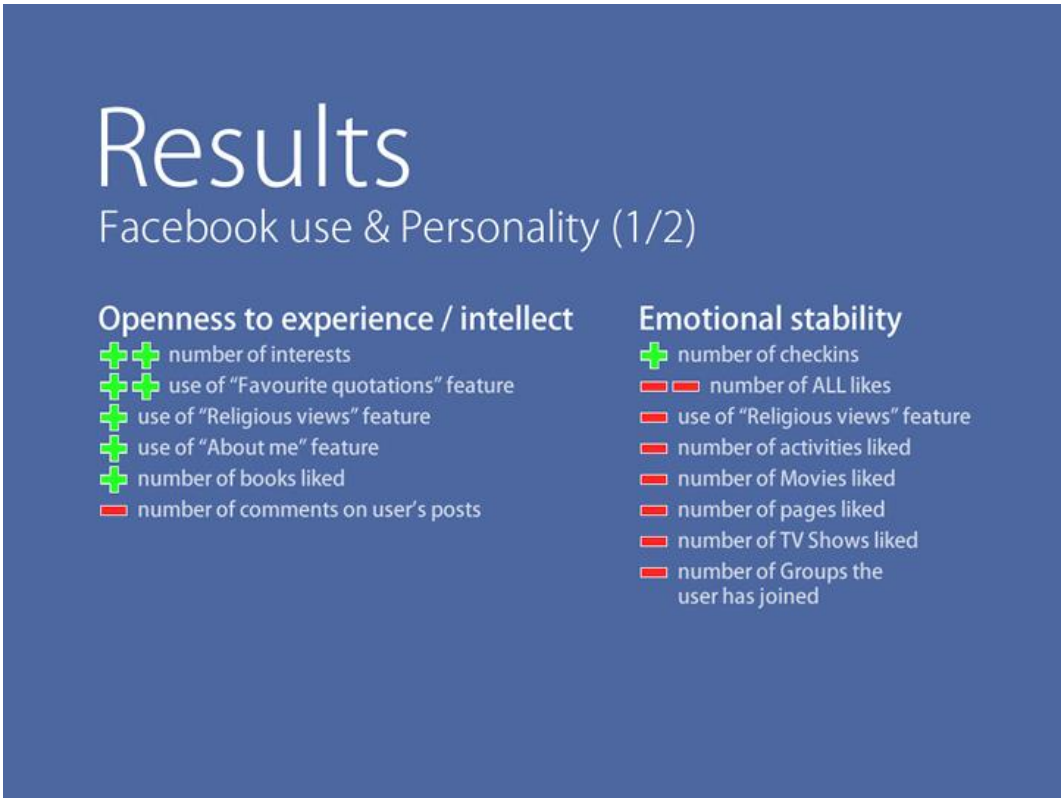
The study was conducted online:





Results

The following slides present the significant correlations found in the data. A cross (+) means that there is a positive correlation ($p < 0.05$) between that item and its header. A red dash (-) means that there is a negative correlation. A double symbol (++ / –) means that the possibility of that result having been produced due to pure chance is less than 1% ($p < 0.01$).



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Results

Facebook use & Personality (2/2)

Agreeableness
- ++ use of "Favourite quotations" feature
- ++ number of posts published
- + number of affiliations
- + use of "Religious views" feature
- + use of "About me" feature
- − number of music-related likes

Extroversion
- + number of likes from others on user's posts
- − number of TV shows liked

Conscientiousness
- − number of Notes published

Results

Facebook use & Learning Styles

Active learners
(vs reflective)
- + number of posts published
- + number of comments on user's posts
- + number of likes from others on user's posts

Intuitive learners
(vs sensing)
- + number of books liked
- + number of movies liked
- + number of music-related likes
- + number of family members on FB

Reflective learners
(vs active)
- ++ number of activities liked
- + number of books liked
- + number of movies liked
- + number of TV shows liked

Visual learners
(vs verbal)
- + number of affiliations
- + number of job positions in user's work history

Discussion

The present study investigated whether the SNS activity of individuals as measured by their Social Bits correlated significantly with their Big Five personality factors and Learning Styles.

The detailed analysis of data in user profiles and overall activity within each social network revealed a significantly large number of correlations with personality traits and learning styles, supporting the study's hypothesis.

In addition, much of the results are in line with previous research on the topic (Amichai-Hamburger and Vinitzky, 2010; Hughes et al., 2012; Ross et al., 2009; Ryan and Xenos, 2011). For example, the sensing/intuitive dimension was found to correlate positively with four aspects of Facebook use and one of LinkedIn (websites). These results suggest that individuals open to experience and intuitive in learning are more likely to share their intellectual and artistic pursuits on Facebook and LinkedIn, supporting research from Amichai-Hamburger and Vinitzky (2010).

More importantly, this indicates that an individual's SNS use is linked to their learning style and personality. In the context of the present study, this suggests that this relationship could be useful in intelligent and adaptive e-learning systems.

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Kostas leads the UI & Design group within Realizeit. He holds a MSc in Cyberpsychology from the Institute of Art, Design and Technology, Dún Laoghaire and a BSc in Computer Science from the University of Sheffield. His work and research has been published on the web and in print.

Prior to joining Realizeit, Kostas worked with a number of international software companies and also the European Commission, both in Ireland and across the EU.

He is involved in a range of R&D activities associated with Realizeit including: Interaction Design, Cyberpsychology, User Experience and Online Education.

Bringing his cognitive psychology and computer science skills together enables Kostas to work closely with the research groups in Realizeit and also the development teams.