Modeling Personality Influences on YouTube Usage

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Abstract

Understanding the personality contextual attributes of target users can help developers design tools that increase the effectiveness of social media sites or identify appropriate lead users to seed products already in development. This paper illustrates that users' personality traits serve as a distinguishable set of characteristics that can be meaningfully related to YouTube usage. A model outlining the structural relations among: personality and motives (predictors), involvement (mediator), and video preferences and user activities on YouTube (dependent constructs) was proposed and successfully tested. The analysis was able to capitalize on the full statistical advantage of structural equation modeling in testing the unattenuated effects of the constructs through the use of fully latent variables. In particular, through the use of the new exploratory structural equation modeling technique, a full set of Big Five personality factors was modeled as latent variables which was not methodologically viable until recently. Modeling a fuller set of predictors allows researchers to control for the influence of non salient predictors and to ascertain the unique and common variances among predictors. Each of the Big Five personality factors was found to have a significant influence on at least one aspect of user participation. Extraversion and openness to experience had the most number of significant effects, showing not only proximal effects on motives but direct effects on video preferences and user activities as well. Although the effects of the other personality factors neuroticism, conscientiousness, and agreeableness were limited to motives, they were moderately stronger than extraversion and openness to experience.

Introduction

Although most communication researchers have come to accept that media usage varies between individuals, there has not been a consensus on how the daunting list of possible individual differences and the ways in which they operate can be systematically organized. In searching for a succinct set of media use determinants, we should first consider how differences among individuals can be systematically explored. McAdams (1995) proposed three levels of personality descriptions: broad, decontextualized, and relatively nonconditional traits (Level I), domain-specific, contextualized personal concerns (Level II), and more idiosyncratic personal identity (Level III). This study focuses on the first two levels. The comparative and nonconditional qualities of personality traits (Level I) can help to promote greater clarity and connection in social media research by serving as a baseline for comparing user characteristics across different platforms and contexts. At the same time, understanding users' motives for social media usage supports explanations for the adoption of media services, and enable predictions about users' engagement with them. Usage motives represent domain and situation specific individual differences (Level II). They represent users' beliefs about how the media can serve their needs and their attempts at coping with aspects of one's environment. But what is the extent of personality influence on contextualized motives? While it is unclear if motives can be neatly nested within personality traits, there is conceptual and empirical utility in investigating the linkages of constructs at these two levels.

A personality system model of social media participation is proposed to account for the relationships among a set of individual difference constructs (see Figure 1). The constructs investigated were (a) personality which represent stable and decontextualized individual characteristics, (b) motives which reflect people's expectancies and beliefs about using YouTube, (c) attitudinal outcomes that express general cognitive and emotional responses to YouTube, and (d) usage patterns that measure more specific media preferences and behavioral intentions. In this study, the attitudinal outcome examined was involvement and the usage patterns studied were video preferences and user activities.

The proposed model was derived by integrating the approach from the expectancy-value model applied to media use (Palmgreen and Rayburn 1982) with the cognitive-affective personality system theory (Mischel and Shoda 1995). Adapting Mischel and Shoda's (1995) personality system theory, personality is conceptualized as a stable system that mediates how users select, construe,

and process social information and generate social behaviors. Social media (in this study, YouTube) is conceived as the situation where its features activate a set of internal reactions — both cognitive and affective — based on the user's prior experience with those features.

The five constructs investigated were aligned from the supposedly most distal predictor of actual behavior to the most proximal according to their level of generality: personality traits → motives → involvement → preferences and usage. The model also takes into account the direct effects of each construct on all succeeding constructs along the pathway.

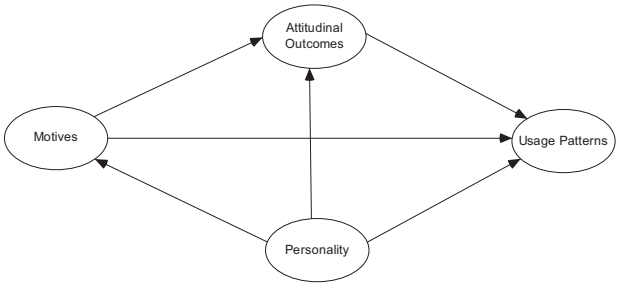

Figure 1. The personality system model of social media participation.

Methods

Participants

The sample (N = 656) comprised 332 women and 324 men with an average age of 26.2 years (SD = 7.9), of which there were 405 Caucasians, 192 Asians, and 59 of other ethnicities. At the time of the survey, 241 participants reported spending 1 to 2 hours per week on YouTube, 153 reported less than 0.5 hour, 113 reported 2.5 to 5.5 hours, 90 reported 0.5 hour, and 59 reported more than 6 hours; 276 participants had been using YouTube for between 1 to 2 years, 264 for more than 2 years, 77 for between 6 months to 1 year, and 39 for less than 6 months. Participants were recruited to complete the online questionnaire through announcements made on email lists of departments and student unions of Cambridge University, external academic discussion groups, and social networks on Facebook.

Measures

Personality. The personality scale used was the 20-item Mini-IPIP which provides similar content coverage of the six facets of each Big Five dimension as its parent instrument IPIP-FFM (Donnellan, Oswald, Baird, and Lucas 2006). The Mini-IPIP comprised 20 statements of which four statements measure each Big Five dimension. Participants were asked to indicate their agreement to the statements on a scale of 1 (*Strongly Disagree*) to 5 (*Strongly Agree*).

Motives. Participants' motives for using YouTube were measured by 12 statements adapted from the Internet usage (Papacharissi and Rubin 2000) and interpersonal communication (Rubin, Perse, and Barbato 1988) motives scales. The items corresponded to four a priori categories — *informational learning* (e.g., "New way to do research"), *pleasure* (e.g., "Because it's fun"), *escape* (e.g., "To get away from what I'm doing"), and *convenience* (e.g., "I don't have to install anything to watch"). Participants were prompted to rate the statements by the question, "To what extent do the following statements indicate why you use YouTube?" using response options that ranged from 1 (*Not at all*) to 5 (*Exactly*).

Involvement. The Personal Involvement Inventory (Zaichkowsky 1994) was used to measure levels of involvement (i.e., perceived personal relevance) which comprised two factors — emotional and cognitive. Participants rated the ten items on a 7-point bi-polar scale in response to the prompt "To you, YouTube is...."

Video Preferences. Unlike traditional media, contents on YouTube are not easily classified into neat categories. For example, Burgess and Green (2009) failed to obtain clearly distinguishable categories or acceptable intercoder reliability in their attempt to code the most popular videos on YouTube. In this study, ten items were used to measure content preferences. Items were created inductively to code the 50 Most Viewed videos each month in the quarter preceding the study. Participants were asked to respond to the list of items by the question, "What type of videos on YouTube appeal to you?" using options that ranged from 1 (*Not at all*) to 5 (*Totally*). An exploratory factor analysis obtained a satisfactory two-factor structure. Three items with the highest factor loadings and best content validity on each factor were chosen as indicators. The first factor labeled *light-entertainment* comprised items that reflected videos that were mainly user-generated and non-serious (e.g., "Funny, silly videos") whereas the second factor labeled *quality/informative videos* had items that reflected videos with some depth and quality of information (e.g., "News / politics / activism").

User activities. The nine items were "Watch videos," "Search for videos," "Rate a video," "Favorite / bookmark a video," "Recommend a video to someone," "Embed / blog about a video," "Post a comment about a video," "Subscribe to someone's videos," and "Upload a video." Participants were asked to rate the list of items by the question, "How frequently do you do the following activities via YouTube?" on response options which ranged from 1 (*Never*) to 5 (*Very often*). An exploratory factor analysis found a clear distinction between passive consumption (factor labeled as *read*) and active participation (factor labeled as *write*). The nomenclature follows Lessig's (2008) characterization of passive and active media behaviors as Read/Only and Read/Write cultures. Three items with the highest factor loadings on write (comment, subscribe, and rate) was chosen as its indicators whereas read had only two indicators (watch and search) because they were the only items with primary

loadings on the factor.

Analysis

The recently introduced exploratory structural equation modeling (ESEM) technique was used to analyze the data (see Asparouhov and Muthén 2009). ESEM overcomes the restriction on items loading on more than one factor in conventional confirmatory factor analysis (CFA) measurement models by allowing the use of exploratory factor analysis (EFA) with matrix rotations. EFA factors were specified for all latent variables except user activities. In addition, the multiple-indicators and multiple-causes (MIMIC) method was specified to control for potential biases from background variables (see Muthén, 1989). This meant that all latent variables were regressed on each of the Big Five factors, the remaining latent variables regressed on each of the four motive factors, the four dependent latent variables regressed on the three intervening latent variables, and all latent variables regressed on the background variables.

Results and Discussion

Effects of Personality

The model was assessed using fit indices which indicated that the proposed relations provide a satisfactory approximation of the actual data, $\chi^2(1350) = 2450.27$, $p < .001$, CFI = .93, RMSEA = .035 with 90% CI [.033, .037], SRMR = .040. The standardized path coefficients (see Table 1) revealed that despite their decontextualized nature, the effects of personality dimensions were nontrivial. Notably, each personality dimension had a significant effect on at least one motive. In addition, a few personality factors had significant direct effects on certain usage patterns. This is despite the view under expectancy-value approaches that personality is a distal predictor of media usage. The findings show that personality can contribute to a meaningful account of social media participation.

The significant relations between personality and other constructs were generally within the expectations of prior research and known characteristics of the personality dimensions. Conscientiousness had a moderately strong negative relation with escape which was expected given that conscientiousness reflects tendencies for diligence and emotional control. Openness to experience too had a negative relation with escape. Because openness to experience reflects greater likelihood to explore between alternatives, individuals reporting higher openness are expected to see media usage as an active pursuit rather than a pass time. This is consistent with the finding in the present study that participants reporting higher openness to experience endorsed more active user activities and a greater preference for quality/informative videos.

The effects of personality on motives were mostly limited to escape and informational learning — only a weak relation between extraversion and pleasure, and no significant relations with convenience were found. Mischel and Shoda (1995) suggested that the relative contributions of personality and situational factors are activated by the configuration of features present in the situation. Pleasure, convenience and escape are motives which focus on the experiential aspect of usage. But unlike escape, participants' pleasure and convenience motives are more likely to be activated by the situation-specific features of the website (pull factors) than external circumstances (push factors) that may be more attributable to individual dispositions. This difference might explain the weak predictability of personality on pleasure and convenience.

Unsurprisingly, openness to experience which is associated with more active usage and conscientiousness which reflects tendencies for diligence and emotional control were both negatively related to escape. The three Big Five factors associated with relational aspects of personality — extraversion, neuroticism and agreeableness — were all significantly related to informational learning which carries a social integrative dimension. The lack of significant relations between personality and involvement suggests that involvement with YouTube was largely situation-dependent. This reflects the nature of involvement as cognitive and emotional consequences of prior engagement with YouTube.

Parameters	Est.	S. E.
Extraversion → Pleasure	.092*	.047
Extraversion → Informational learning	.183**	.047
Extraversion → Quality/Informative videos	.118*	.053
Neuroticism → Informational learning	.229**	.045
Conscientiousness → Escape	.261**	.047
Agreeableness → Informational learning	.202**	.066
Openness → Escape	.132*	.054
Openness → Quality/Informative videos	.183**	.059
Openness → Write	.151**	.054

* $p < .05$; ** $p < .01$.

Table 1. Standardized Path Coefficients of Personality.

Influence of Background Variables

Variations associated with background variables are reported in Table 2. There were no significant differences in the ratings on emotional involvement across them. Pleasure was influenced by only the time variables. Women generally reported higher informational learning while more men indicated stronger preferences for light-entertainment. Higher ratings of cognitive involvement were reported with increasing age whereas higher endorsements of convenience and read activities were associated with younger participants. Higher endorsement

of informational learning, write activities, and preferences for light-entertainment were associated with Asian participants. Earlier adopters had higher endorsements of all four motives, quality/informative videos and read activities. Participants who reported spending more time on YouTube also gave higher ratings on all motives and read activities. However unlike earlier adopters, heavier users of YouTube endorsed higher write activities, lesser preferences for quality/informative videos and much higher read activities.

Application to User Profiling

The findings suggest that profiles of YouTube users can be meaningfully constructed through their personality and motives. This could open up the possibility for the development of a useful user classification for content recommendations, advertisements and search results. Very brief personality questionnaires (e.g., Gosling, Rentfrow and Swann, 2003) can be included during user registration or in quizzes. Alternatively, researchers can also examine if the personalities of users can be predicted based on usage patterns. Although more studies are required to establish their generalizability, similar patterns are likely to be found with other social media platforms given the relatively decontextualized nature of personality traits and the use of motive factors that have been consistently replicated in previous studies. More specific personality variables (e.g., contextual age, unwillingness to communicate, need for cognition) or Level III personality characteristics may be incorporated into the model.

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	Gender (1 Women)		Age		Ethnicity (1 Asian)		Time spent per week		Time of adoption	
	Est.	S.E.	Est.	S.E.	Est.	S.E.	Est.	S.E.	Est.	S.E.
Pleasure	.136	.097	.028	.050	.115	.111	.388**	.039	.158**	.039
Informational Learning	.206*	.097	.078	.049	.417**	.109	.285**	.041	.095*	.040
Escape	.028	.097	.089	.049	.160	.109	.204**	.041	.121**	.039
Convenience	.129	.099	.169**	.050	.155	.113	.368**	.040	.169**	.040
Cognitive Involvement	.047	.088	.113*	.046	.071	.104	.201**	.042	.115**	.036
Emotional Involvement	.055	.093	.005	.048	.084	.109	.045	.046	.054	.039
Quality/informative videos	.007	.105	.090	.055	.201	.123	.045	.052	.081	.044
Light entertainment	.049	.105	.029	.055	.456**	.122	.189**	.051	.133**	.044
Read	.102	.076	.090*	.040	.044	.090	.435**	.037	.067*	.032
Write	.109	.096	.064	.050	.233*	.112	.134**	.047	.072	0.04

* $p < .05$; ** $p < .01$.

Table 2. Effects of Background Variables.