Functional Domains of Social Media Platforms.

Structuring the Uses of Facebook to Better Understand its Gratifications.

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Abstract

Social media pose serious challenges on uses-and-gratifications research. This paper proposes a measurement approach addressing one tangible challenge, namely the entangled use of contemporary media services. We build on the conceptualization of Facebook as a toolkit of features (Smock, Ellison, Lampe, & Wohn, 2011) to search for functional domains underlying the individual usage of Facebook features. These functional domains enable us to measure usage of social media in a differentiated and congruent way.

To demonstrate the heuristic power of this measurement approach, we focus on the dichotomy between contributing and consuming social media content. Based on an survey with 482 Facebook users, we find the manner of how "contributive" Facebook is used being related to certain gratification expectations—if and only if the measures control for a general bias of "liking" the service under research. We conclude that measuring usage through use-of-features can serve as valuable complement for uses-and-gratifications research.

Keywords: Social media, features, uses-and-gratifications approach, media selection, Facebook, functional domains

Highlights

- Contribution and consumption on Facebook are indicated by use of different features.

- Measuring the use intensity of features allows controlling for the general affinity.

- A differential measure is able to characterize a Facebook user's activity.

- Focusing on specific use patterns facilitates research of integrated web services.

1. Introduction

The "social web" has brought about a series of changes to online media and services. Among them are changes that pose disruptive challenges to research on intentional media choice, commonly subsumed as uses-and-gratifications research. The rise of user-generated content, increases in parallel and blended usage of services, and the continuous development of platforms entailing changes in the affordances of media services. The significant increase in user-generated content (Leung, 2010; Richardson & Stanyer, 2011; Ritzer, Dean, & Jurgenson, 2012; Ritzer & Jurgenson, 2010) is probably the most visible change. It is not uncommon for Facebook users to read more user-generated content than professional texts, although there is no strict line that separate these kinds of contents. User opinions and comments often refer to professional content (Baden & Springer, 2014; Richardson & Stanyer, 2011; Singer, 2014), or simply spread it (Shao, 2009). The sheer amount of user-generated-content makes it a substantial part of Facebook and other social online platforms (Leung, 2010; Smith, Fischer, & Yongjian, 2012). Technically, every user could use the tools for creating content. Practically, the literature on *produsers* (Bruns, 2009; Jers, 2012) or *prosumers* (Ritzer et al., 2012) reveals that few users account for most contents, while the majority contributes little content or nothing at all (Kittur, Suh, Pendleton, & Chi, 2007; Lampe, Wash, Velasquez, & Ozkaya, 2010). Individual activity, in the

sense of participation (Shao, 2009), contribution, or production, may increase quality and diversity of online content (Anthony, Smith, & Williamson, 2007; Morgan, Gilbert, McDonald, & Zachry, 2014), and relates to structures of interpersonal communication, influence, and persuasion (Karlsen, 2015; Katz, 1957; Lazarsfeld, Berelson, & Gaudet, 1944; Weimann, 1982, 1991). Being an active user was also found to correlate with positive outcomes for the individual (Alloway & Alloway, 2012; Brandtzæg, 2012; Bryant, Marmo, & Ramirez, 2011; Burke, Marlow, & Lento, 2010).

Social web usage typically is an interplay of contribution and consumption. Users switch roles abruptly, such as reading the teaser of an online newspaper article on Facebook (consumption), pressing the "Like" button and then deciding to comment on the teaser (contribution)—all this without even changing the web page. Yet, it is up to the users to which degree they assume each role. Some differences in actively contributing to social media can be explained by the users' personalities and individual conditions (Amichai-Hamburger & Vinitzky, 2010; Correa, Hinsley, & Zúñiga, 2010; Ong et al., 2011). Further differences are explained by the users' needs and expectations, which have been scrutinized in the tradition of the uses-and-gratifications approach (Katz, Blumler, & Gurevitch, 1973; Perse & Courtright, 1993; Rosengren, 1974). The approach was originally conceived for the *selection* of media products (media, channels, programs, ...), but researchers have widened both, the understanding of *selection*, and the scope of media-related activity. Processes describing the interplay of needs, expectations, and available media options were found useful not only for explaining what TV channel is chosen, but also for understanding usage of online platforms, services (Lee & Ma, 2012; Raacke & Bonds-Raacke, 2008b), and platform features (Smock et al., 2011). We follow that broad conception, but also address challenges that arise when applying the concept of need-

driven media behavior to social media platforms. This paper specifically addresses the relation

between features and uses of social media, and the individuality in *how* social media platforms

are used.

1.1. Features and Functional Domains

A lot of uses-and-gratifications research has focused on explaining the choice of

channels/content, the intensity of using a specific service, or more general "web activities"

(Ferguson & Perse, 2000, p. 164). Smock, Ellison, Lampe, and Wohn (2011) choose a deeper,

more detailed perspective. They focus on single *features* of an online application, and show that

specific gratifications explain the use of certain Facebook features. This approach seems very

beneficial for a modern uses-and-gratification theory because it identifies social networking sites

as the complex web services that they are—Facebook offers very different experiences for each

individual, based on the user's personal feature preferences. This is due to the fact that Facebook

offers more functionality than a single user will ever use, so the user adopts an own set of

features and habits on how to put them into use. This set of features is not arbitrary, but

resembles basic functionality underlying social media. We use the term *functional domain* for a

single functionality to avoid wording confusion. Other platforms like YouTube, Instagram,

Twitter, Snapchat, Google+, … serve the same functional domains like Facebook, or a subset of

them, and provide further functional domains as well.

By conceptually separating a social media platform like Facebook into its functional

domains, we follow what Eveland (2003, p. 397) describes as "mix of attributes approach." Not

only does such an abstraction from the distinct service liberate research from the rise and fall of

social media platforms, it also overcomes the limitation that platform features are volatile and using them has no inherent meaning.

We pick up the concept of user-generated content as an example to demonstrate the application of functional domains to uses-and-gratifications research. First, user-generated content is a substantial part of social media, and second, literature on user-generated content regularly refers to two functional domains: We expect certain Facebook features to facilitate the contribution of contents (user contents on Facebook are typically short, a comment for example), and other features to serve the consumption of content. Literature on user-generated content clings these functional domains and their meaningless features to meaningful concepts. Based on empirical data, we demonstrate that functional domains fit well into uses-and-gratification theory. In many studies we have observed a common principal factor (*general liking*) that biases gratification and usage reports. We introduce a differential measure on the individual level, *contributiveness*, to describe the relation between contributing and consuming on Facebook, and show that contributiveness relates to distinct gratifications. By providing the option for such differential measures, we argue that feature-based measures have the potential to overcome the empirical issue of a general liking.

1.2. Social Networking Sites and their Features

There are two practical reasons for choosing Facebook as show case, when examining social networking sites (SNS) and their underlying functional domains. First, Facebook is among the most prominent web services in many western countries, and there is a substantial body of research about Facebook. Second, there is a broad variety of features that Facebook users can select from (Lee, Kim, & Ahn, 2014), ranging from interpersonal communication tools to the

public presentation of events. Actually, this richness of features is a defining aspect of SNS: According to Boyd and Ellison (2007) and subsequent authors (see Weissensteiner & Leiner, 2011), a SNS is a multi-purpose online service consisting of a wide range of different technical features, which, in essence, enable users to provide online information about themselves on a profile and to access a contact list to keep in touch with people who are also users of that particular SNS. Though SNS also support the formation of new contacts in the online environment, most users engage with SNS to maintain social relations to pre-existing offline-world contacts (Bonds-Raacke & Raacke, 2010; Raacke & Bonds-Raacke, 2008a).

Privacy and visibility have become increasingly important concerns regarding communication via SNS (Boyd & Hargittai, 2010; Brandtzæg, Lüders, & Skjetne, 2010; Debatin, Lovejoy, Horn, & Hughes, 2009). Facebook users can choose between private messaging (one-to-one communication), messages that are visible to certain groups, and public messages, which are either related to another piece of content (comments), directed at another user (posted on their wall/profile), or directed at a scattered audience (status updates). Apart from four basic features (profile, contact list, private message and comments), SNS show great differences in what features they actually provide. Some include gaming, calendar and business purposes, or allow multimedia content such as videos or podcasts.

SNS have often been defined by their features, and the use of SNS has been measured by the use of features (Hunt, Atkin, & Krishnan, 2012; Lee et al., 2014; Ryan & Xenos, 2011), yet the concept of a feature has received little attention so far. The most prominent definition was introduced by Smock, Ellison, Lampe, and Wohn (2011, pp. 2323–2324) and is based on the concept of activity: It incorporates every "technical tool on the site that enables activity on the part of the user" and "allow[s] different activities to be performed". The features that Smock,

Ellison, Lampe, and Wohn (2011) itemize in their study are status updates, comments, wall posts, private messages, chat, and groups. Hunt, Atkin, and Krishnan (2012, p. 188) consider such features as tools for interpersonal communication that allow "essentially expressive acts," for instance, activities such as scrolling through other users' posts, commenting and updating own information. We draw at least two conclusions from these conceptualizations. First, SNS features are based on technical functions (e.g., buttons and menu options). Second, which and how many functions form a feature is subject to interpretation. Adding someone to one's own contact list, for example, may be performed with a single click—playing an online game on Facebook could involve hundreds of single functions and actions. The interpretation what a feature is, is led by common sense (when features depend on another to be useful), by the user interface, and by communication norms, making it easy to address features in a survey. Yet, features are platform-specific and may change over time.

The first person to study underlying intentions of using Facebook features was Bumgarner (2007). In a principal component analysis (PCA) of the importance of 38 features, he found eight components: (1) miscellaneous features that users do not like very much, (2) groups, (3) friend functions, (4) personal info, (5) regulatory functions, (6) practical info, (7) events and (8) one factor that summarized non-consistent features. Other than features, which are very close to a SNS's technical functions, the components found by Bumgarner (2007) describe more general activities of SNS users that are less specific for a single platform. The multidimensional perspective tells something about *what* people use Facebook features for. Answers to the question *why* people use different features are provided by Smock, Ellison, Lampe, and Wohn (2011), who show that the use of features largely depends on what gratifications a user seeks. Using status updates, for example, is significantly correlated with information sharing motives.

Commenting is correlated with relaxing entertainment, companionship as well as social interaction, and writing on other people's walls correlates with professional advancement, habitual pass time and social interaction.

1.3. Uses and Gratifications

As features can be defined by the concept of activity (Smock et al., 2011), one can argue that the question *why* people use different features cannot truly be explained without the most prominent theoretical framework for active media use behavior: The uses-and-gratifications approach (UGA, Katz, Blumler, & Gurevitch, 1974). It describes the individual, purposeful utilization of media by users in order to satisfy their needs (for an overview see McQuail, 2010).

The concept of user activity in the UGA was originally limited to making choices from (few) media options, or content. The number of options to choose from has grown ever since. Today, web services do not only offer a wide array of choices (both, contents and technical functions like buttons and hyperlinks), but most of them *demand* a lot of choices/actions per time to *use* the service appropriately (Livingstone, 2004; Ruggiero, 2000; Sundar & Limperos, 2013). To fulfill these demands and efficiently use the services, users need to perform most such actions in an automated, least-conscious way (Bayer, Sonya Dal Cin, Campbell, & Panek, 2016). This makes it futile to explain every single mouse click based on what gratifications a users seeks, even more so as it often requires a series of related actions to perform a certain activity. Yet, the gratifications that a user seeks (Palmgreen & Rayburn, J. D., 1982) are still a promising predictor for what contents or—at least for experienced users—which functional domains users will choose. Notably, the vast majority of Facebook users can be considered experienced users.

The expectations about what gratifications media can provide (Katz, Blumler et al., 1973) forms the cognitive basis for making rational choices, when the user seeks specific gratifications (Rayburn, J. D. & Palmgreen, 1984). *Expected gratifications*, often built on practical experience with media (*gratifications obtained*), are the cognitive correlate to the *gratifications sought*, when different options are compared for their fit with a user's current needs. They have been to the focus of several studies, especially studies about Internet usage (LaRose, Mastro, & Eastin, 2001; Lin, 1999), either as sole phenomenon or as part of a more extensive media image (Scherer & Schlütz, 2004). Yet, the role of expected gratifications was only recently formalized in empirical models (LaRose & Eastin, 2004).

The research on social web services employing the UGA has become more differentiated over time. Early studies were concerned with the frequency or intensity of general Internet usage (LaRose et al., 2001; Papacharissi & Rubin, 2000; Stafford, Stafford, & Schkade, 2004), subsequent studies put their focus on certain platforms, such as community websites (Lampe et al., 2010; Rafaeli, Ravid, & Soroka, 2004), social networking sites (Park & Lee, 2014; Quan-Haase & Young, 2010; Raacke & Bonds-Raacke, 2008a), and, finally, the utilization of specific SNS features (Hunt et al., 2012; Smock et al., 2011). Gratifications that SNS were regularly found to provide are mostly related to social needs (Raacke & Bonds-Raacke, 2008a), e.g., getting information about social events, keeping in touch with friends, self-expression (Bonds-Raacke & Raacke, 2010), but also to provide a channel for interpersonal communication (Urista, Dong, Day, & Kenneth D., 2009).

Regarding the distinction between using SNS to contribute versus consume content, Joinson (2008) finds that both usage patterns satisfy informational needs, while Leung (2010) finds that contribution on Facebook mostly relates to social/affection needs and entertainment,

but not to cognitive needs. Smock, Ellison, Lampe, and Wohn (2011, p. 2322) step down to the level of single features and look at Facebook as "a toolkit of features", where users "may be attending to different features for different reasons." This offers additional differentiation regarding content contribution, as for example, spending time in Facebook groups is related to "expressive information sharing", while posting on the own wall is not (Smock et al., 2011, p. 2325).

Long before the new media has spread, media use was found to satisfy a wide range of needs. Katz, Gurevitch, and Haas (1973) and McQuail, Blumler, and Brown (1972) presented classifications of needs and gratifications, that were applied and replicated in many studies. Although these catalogs were designed for exposure to traditional mass media, they have also proven useful in the context of new media (Bumgarner, 2007; Papacharissi & Rubin, 2000). More recent works have revised and complemented the catalogs to meet the characteristics in which the Internet differs from traditional media, especially the expansive concept of interactivity (Bucy, 2004; Quiring & Schweiger, 2008; Shao, 2009) and demassification (Ruggiero, 2000). New gratifications ascribed to the Internet and especially SNS include relationship maintenance and establishment of new relationships, active information sharing (acting as a gatekeeper by selectively passing on relevant information and advice to others), social surveillance (monitoring other users' online activity), and self-portrayal (Choi, 2016; Park & Lee, 2014; Raacke & Bonds-Raacke, 2008a; Scherer & Schlütz, 2002; Schorr & Schorr-Neustadt, 2000; Sheldon, 2008; Smock et al., 2011; Tosun, 2012; Whiting & Williams, 2013; Yoo, 2011). These additional gratifications to some extent pierce the boundary between need satisfaction and more practical uses met by features, potentially permitting for conceptual overlaps between gratifications.

1.4. General-Liking Bias

A general idea behind functional approaches (Ajzen, 2002; Netemeyer & Bearden, 1992; Oliver & Bearden, 1985; Thorbjørnsen, Pedersen, & Nysveen, 2007) is that a more positive experience relates to more intense use. This relation if not necessarily limited to intentional use: Positive outcomes may as well result in positive feelings towards a service, and when media is used in an automated manner (LaRose, 2010; Schnauber & Wolf, 2016), positive feelings likely promote further use of the service, as well (Bayer et al., 2016). This relation is increased by a phenomenon specific for multi-faceted software, such as a social web platform: In the beginning, it requires some training to become familiar with the platform (Murray & Häubl, 2003). Then, more intensive use results in discovering more features and secondary uses. The initial investment gives the platform a practical bonus over other platforms that the user would have to learn, before switching. And the discovery of additional uses directly increases the gratifications of the platform, as seen from the user's individual perspective.

In summary, using a service can create a large halo of sympathy for this service. Some of this sympathy is related to specific gratifications, but there is lots of room for a *generalized liking*. In uses-and-gratifications such a *general liking* could increases nearly every measure of gratifications (sought, expected, and obtained). Such a *liking effect* easily blurs the unique contributions that gratifications may or may not have to service selection.

2. Application of Feature-Use Measures to Empirical Research

Regarding its features, Facebook is similar to office software: It provides much more functionality than a single user will ever use. An Internet user will try some features and, over time, adopt an individual set of features and evolve routines of usage (LaRose, 2010; Schnauber

& Wolf, 2016). By using "their" features users experience specific outcomes (gratifications) and associate specific possibilities (affordances, Norman, 1999) with "their" SNS. We do not try to disentangle the process of use and building the individual image of an SNS platform (Palmgreen, 1984), but rather focus on its result, which are expected gratifications (Galloway & Meek, 1981; LaRose, 2010) associated with a SNS (Quan-Haase & Young, 2010). This paper claims that such gratifications do not only relate to the intensity of use, but even more to specific patterns of *how* an SNS is used.

We argue that the *how*, the manner of using an online service like Facebook, can be quantified by measuring the use of distinct features. To evaluate the degree to which such a measure allows new insights and fits into existing theory, we go through a series of research questions. First of all, a distinct feature itself has little meaning. Therefore, our first question is:

RQ1: Are there systematic patterns behind the individual choice of Facebook features?

We have outlined the dichotomy between activity and passivity regarding information behavior, i.e., between contributing and consuming contents. We expect to find patterns in the use of Facebook features (functional domains) that match these two concepts. To probe whether functional domains allow for better explanation of gratifications, our second question is:

RQ2: What expectations go along with certain usage patterns, i.e., what gratifications do users expect, depending on how much they *consume* and *contribute* on Facebook?

This question is exploratory in its nature. Earlier research suggest that contributing content to Facebook is related to social, personal-integrative, and affective gratifications, but not to cognitive gratifications (Leung, 2013; Shao, 2009). Contrarily, cognitive and affective

gratifications may be received for consuming content (Shao, 2009). We will test for these relations, but anticipate that the halo of liking Facebook will obscure detailed relations. We shall therefore expect that either consuming or contributing on Facebook will affect the perception of *any* gratification.

There was little theoretical value of functional domains regarding the uses-and-gratifications approach, if we only found nonspecific relations. Our third research question therefore addresses the issue of general liking. The intensity of using features to contribute content will be related to the intensity of using Facebook in general. Therefore, the intensity with that users contribute content is not informative about whether they are more engaged in consuming or in contributing content. The relation between contribution and consumption, however, is an important indicator for the role a user plays in the social network: To what degree do users share information and thoughts? We name this relation *contributiveness*: If someone uses contribution-features more intensively, *relative to* the intensity of using of consumption-features, then they rate higher on contributiveness. A user who's rarely using Facebook (and therefore has a low contribution rating) can still have a high contributiveness, if they rate even lower on consumption. This does justice to the limited time budgets that a substantial part of users face in reality: If they prefer contribution over consumption during the rare moments when using Facebook, they are still very focused on contribution. Contributiveness is not necessarily good or bad, it's simply a measure of how someone uses Facebook.

Figure 1 depicts the transformation of contribution and consumption intensity into a general participation intensity, and the more specific contributiveness measure. Some user types described in literature were positioned in the chart to better illustrate the meaning of the dimensions: People who do not contribute, but only consume, have been named *Lurkers*

(Nielsen, 2006) or *Tourists* (Kozinets, 1999), for example. They show different degrees of consumption, but share a very low contributiveness. *Attention seekers* (Ofcom, 2008), on the contrary are very active contributers, but do (relatively) little reading. This makes them very contributive. Another example are *Opinion Leaders,* "certain people who are most concerned about [an] issue as well as most articulate about it" (Lazarsfeld et al., 1944, p. 49). While originally found in offline peer-networks, they are of no less importance for online social media networks (e.g., Aral & Walker, 2012; Dang-Xuan, Stieglitz, Wladarsch, & Neuberger, 2013; Johnson, Kaye, Bichard, & Wong, 2007; Nisbet & Kotcher, 2009). In a similar way, *Secondary Gatekeepers* (Singer, 2014) consume online contents to select some contents that they share with their peers or followers. We chose these types to illustrate the meaning behind contributiveness. Actually these types have been defined along dimensions such as intention and influence, but not consumption and contribution.

Our third research question is whether a relational/differential measure might be more suitable to explain a user's expectations than the absolute intensity measures.

RQ3: Is contributiveness related to more specific gratification expectations then contribution and consumption are, when observed separately?

Our precise expectation is to find more specific gratifications related to contributiveness than to the intensity of contribution or consumption. RQ3 can be tested statistically, if phrased the other way around (note that use and gratification cause another on both directions), i.e.: Does it make sense to measure distinct gratification expectations instead of a general liking? Our hypothesis then is that a differentiation of gratifications will increase explanation only for
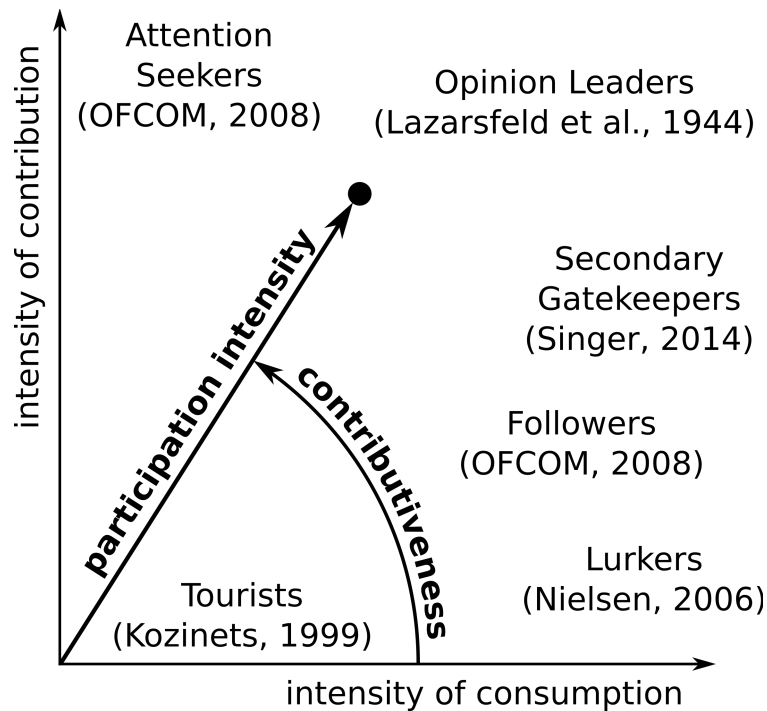
Figure 1: Contributiveness as relation between contributing and consuming content.

contributiveness, but not (or only for a smaller amount) for the intensity of using consumption or

contribution features.

3. Method

To answer these questions, we collected data from a non-probability sample by means of an

online survey. Operating our standardized questionnaire via the Internet lend itself to survey

Facebook users. Participants were recruited from the SoSci Panel, a large pool of mostly highly-

educated volunteer respondents from Germany, Austria, and Switzerland, comprising students

and employees/freelancers to a similar percentage (Leiner, 2016). Invitations were delivered to

2977 panelists who previously had declared being 40 years or younger (in order to focus on

likely Facebook users), resulting in 487 completed questionnaires from Facebook users. Records

suffering more than 20% item-nonresponse (weighted) were removed as well as records completed unrealistically fast (less than 500 sec., which is half of the median completion time) and one extreme outlier, leaving 482 records for analyses (43% students, average age 28 years, $SD = 6.408$ years, 69% female, 89% higher education entrance qualification). Three out of four respondents categorize themselves as *regular* Facebook users, two-thirds are using Facebook on a regular basis for more than two years.

3.1. Measures

One major aspect of our research questions is the use of features. In a preliminary analysis 35 distinct Facebook features were identified (Table 2), often comprising a series of technical functions. Editing one's profile, for example, may include selecting the profile view, changing data, and saving the changes. To achieve definitions that are valid from the user's perspective, a team of three regular Facebook users was asked to identify what they conceived as features. The study was conducted when Facebook "only" had the like button, few weeks before "emojis" were made available, providing more differentiated feedback on postings.

To measure the intensity with that each of the 35 feature is used, we employed a three-step process. This aimed to reduce survey load and yield additional insights. First, we inquired about knowledge of each feature, using a quiz-like recognition task that included 35 existing and 5 non-existing features. Then, respondents should indicate which of the known (existent) features they use at least two times a year and—in the third step—rate the use frequency on a six-point-scale. We opted for use frequency and against usage time for a simple reason: Accessing the web on smartphones, and specifically Facebook, has become "an integral part of everyday life" and, therefore, users likely underestimate the time spent with those services (Madianou, 2014, p. 674).

While usage time typically is a more accurate measure regarding the competition for a day's 24 hours, use frequency is a better indicator for interrupting other activity, for being on a user's mind, and it's more robust against systematically underestimating the usage.

We expected a heavily skewed distribution of use frequency, which lead us to logarithmic response options: About twice a year, about once a month, about 5 times a month, about twice a week, about 5 times a week, and several times a day. Not knowing or not using a feature implies a seventh response. These seven options provided a sensible distribution and good differentiation during analysis. Further analyses showed that using logarithmic options for the use intensity did not impose restrictions on working with their mean values. The average use intensity, then, served as a combined index to measure the participants' intensity of Facebook use (similar to Smock, Ellison, Lampe, and Wohn (2011), Cronbach's $\alpha = .866$). Partial indices were computed for consumptive and contributing use. Our findings to RQ1 (below) suggest that four features are characteristic for contribution ($\alpha = .813$) and three features indicate consumptive use ($\alpha = .657$). The transformation of these indices into those for *participation intensity* and *contributiveness* is illustrated in Figure 1 (above).

The other major aspect of our research questions are the users' gratification expectations regarding Facebook. To capture a broad range of possible gratifications, we used a series of 36 items based on literature to cover various gratification dimensions: Relaxation, pastime, escapism, entertainment, social interaction, communication, information, self-portrayal, and social surveillance (for a full list of items and references see Table 5, appendix). Original items were adapted to Facebook, if necessary. Respondents rated each item on a five-point scale.

3.2. Gratification Dimensions

To subsume the expected gratifications under gratification categories (Katz, Gurevitch et al., 1973; McQuail et al., 1972), we conducted an exploratory factor analyses (EFA) following the procedures suggested by Fabrigar, Wegener, MacCallum, and Strahan (1999). With the categories from Katz, Gurevitch, and Haas (1973), McQuail, Blumler, and Brown (1972), and more current research (Table 5, appendix) in mind, we ran analyses with four, five, and nine factors. Oblique rotation (direct oblimin) was chosen to represent the underlying constructs more accurately under the likely possibility of non-independent factors. To our satisfaction, the factors identified in the five-factor solution (Table 1) matched the categories according to Katz, Gurevitch, and Haas (1973) with only a few minor differences. To create indices for subsequent analyses, 26 of the 36 items were chosen that (a) showed a loading above .40 on one factor, (b) did not load above .30 on any other factor, and (c) were not too close to specific Facebook features. The latter criterion was added post-hoc, after a series of items with weak communalities turned out to describe nothing more than using a specific Facebook feature ("… because I enjoy the games and other apps", "... to communicate with more than one person at the same time in groups or chats", "… to look at photos, videos or status updates of my friends"). We realized that such items are not distinctive for expected gratifications and therefore had to be excluded systematically. Five indices were created for personal integration (5 items, $\alpha = .768$), social integration (4 items, $\alpha = .825$), cognitive gratifications (4 items, $\alpha = .716$), affective gratifications (5 items, $\alpha = .834$), and escape or tension-release (8 items, $\alpha = .909$).

Table 1

Factor loadings for exploratory factor analysis with direct oblimin rotation of gratification expectations

Gratification expectation I use Facebook …	Factor 1: escape or tension-release	Factor 2: cognitive gratifications	Factor 3: social integration	Factor 4: affective gratifications	Factor 5: personal integration
… because I am bored.	**.827**	.070	-.032	.005	.152
… to occupy myself.	**.799**	-.071	.003	-.124	.048
… to have something to do.	**.796**	-.056	.009	-.023	.014
… to kill time.	**.766**	.100	-.074	.026	.144
… to get away from other things.	**.760**	-.041	-.018	-.081	-.058
… to get away from my responsibilities.	**.727**	-.016	.022	.035	-.115
… to escape from everyday life.	**.710**	-.035	.013	-.085	-.082
… because it helps me to forget my problems.	**.497**	.050	-.002	.125	-.235
… because it makes me ease off.[1]	**.481**	-.053	.049	**-.412**	-.054
… because I enjoy the games and other apps.[1,2]	.184	.027	-.075	-.133	.067
… to inform myself about certain topics.	-.009	**.782**	.070	-.074	.183
… to receive advices and recommendations.	.046	**.673**	-.013	.017	-.015
… to learn about information at first hand.	-.029	**.510**	-.013	-.204	-.025
… to share information that could be relevant for others.	-.131	**.500**	-.155	.129	-.184
… to give good advice based on my experiences.[1]	.105	**.461**	.010	.143	**-.329**
… to encounter arguments to different views.[1]	.073	**.387**	.011	-.136	-.140
… to get to know like-minded people.[1]	.021	**.357**	-.151	.123	-.172
… to keep in touch with friends and acquaintances even if they live far away.	-.013	-.108	**-.816**	-.057	.082
… to keep in touch with friends and acquaintances	.018	.003	**-.772**	-.117	.061

who live nearby.					
… to exchange with my friends and my family.	-.059	.011	**-.726**	-.088	.078
… to re-establish contact with old acquaintances.	-.002	-.043	**-.601**	-.077	-.018
… to contact persons with whom I haven't been directly involved yet.[1]	.080	.151	**-.325**	.033	-.154
… to communicate with more than one person at the same time in groups or chats.[1,2]	.050	.034	**-.310**	.098	-.057
… because it is fun.	.032	.018	-.090	**-.745**	-.064
… because it is entertaining.	.054	-.009	-.076	**-.719**	-.014
… because it is exciting.	-.016	.175	-.041	**-.592**	-.122
… because I want to take a break.	.280	.060	.039	**-.586**	.024
… to look at photos, videos or status updates of my friends.[2]	.057	.018	-.131	**-.489**	-.080
… because it relaxes me.[1]	**.359**	-.046	.048	**-.486**	-.090
… to learn more about others.	.015	.002	-.148	**-.482**	-.148
… to stay up-to-date.[1]	.008	**.363**	-.057	**-.402**	.018
… to express who I am.	.024	-.098	.049	-.084	**-.820**
… to share my views, opinions and moral concepts.	-.016	.200	-.039	-.029	**-.554**
… to inform others about my interests.	-.101	.210	-.133	-.118	**-.550**
… to compare myself to others.	.160	.036	.039	-.072	**-.438**
… to inform as many friends as possible at once about changes in my life (i.e. relationship status, change of residence).	-.066	.014	-.184	-.151	**-.430**

Notes. *KMO* = .829, *Bartlett Chi²* = 8623.976 ***, *df* = 630, *R²* = 46.6%. Factor loadings > .30 are in boldface. [1] Items with loadings below .40 or double loadings above .30 were excluded from the indices. [2] Items that refer to specific Facebook functions were excluded from the indices.

4. Results

RQ1 asked for functional domains behind the usage of Facebook features—especially for feature-sets that serve the contribution or consumption of content. In search for such underlying domains, we conducted another explorative factor analysis (EFA with oblimin rotation), this time searching for structures behind the frequency with that different features are used. Some of the 35 features measured in our questionnaire were barely known or used by the respondents. To avoid artifacts caused by lots of respondents not even knowing that a feature exists, we applied a 50% hurdle: Only those 26 features that half of the respondents had ever heard about were included into the EFA.

We tested different numbers of factors, and chose a solution with five factors (Table 2, KMO = 0.9, Bartlett Chi^2 = 3210***, df = 325, R^2 = 36.4%) due to factor interpretation and elbow criterion. Our interpretation of the factors is that they organize the features into sets that allow for contribution, gaming, friend management, content consumption, and group coordination. Although Facebook has matured over the recent decade, these functions by and large resemble earlier findings by Bumgarner (2007).

The structure underlying feature usage supports the notion (RQ1) that some features are typical for participation or contribution of content, while others typically serve the consumption of contents. Contributing contents seems to strongly distinguish between different Facebook users: This single factor explains 22.3% of variance, leaving only 14.1% to the other four factors. We created intensity-of-use indices for functional domains of contribution and consumption, as this is the focus of our subsequent analyses. The indices are based on items with a loading above .400 on the respective factors, but exclude the item "to use the like button on posts" due to its substantial loading on both factors. As the "like" button is very central to the use (and brand)

of Facebook, our interpretation was that the "like" has different uses instead of being characteristic of a specific activity or use. In spite of the small number of items, the indices for contribution (4 items, $\alpha_1 = .813$) and consumption (3 items, $\alpha_2 = .657$) both are sufficient regarding their reliability estimates. Respondents who report a more frequent use of contribution features also report a more frequent use of consumption features ($r = .339$, $p < .001$).

Table 2

Overview of factors and allocated features

How often do you use the following features?	Factor 1: contribution	Factor 2: gaming	Factor 3: friend management	Factor 4: content consumption	Factor 5: group coordination
post in one's own timeline	**.745**	.040	.106	-.017	-.052
comment on posts	**.693**	.007	-.094	-.082	.178
share posts	**.673**	.092	-.043	.026	.051
post in other users' timelines	**.603**	-.029	.111	-.066	-.044
to use the like button on posts[1]	**.569**	.028	-.119	-.326	.149
tag in comments or posts	.397	-.008	.079	-.102	.236
to use the like button on pages	.336	.057	.241	-.149	.065
edit my profile (updating photos & information)	.331	-.033	.341	-.001	-.015
share memories	.309	.133	.280	.077	-.090
send game invitations	.001	**.781**	-.062	-.009	.031
use game apps	-.058	**.768**	.041	-.018	-.030
follow friends	.035	.077	**.529**	-.075	-.045
edit one's privacy settings	-.077	.021	**.431**	-.105	.069
add friends	-.063	-.077	**.431**	-.070	.242
block friends	.181	-.067	.304	.027	.083
create friend lists	.106	.055	.296	.056	-.061

report users	.219	.001	.263	-.047	.090
poke friends	-.001	.106	.250	-.035	.085
read one's own news feed (news/announcements)	.125	.064	-.043	**-.561**	-.068
read the timeline/the profile of friends	.113	-.035	.126	**-.544**	.034
search with the search bar	-.025	-.027	.190	**-.538**	.139
create groups/events	.075	-.010	-.029	.154	**.595**
manage event invitations (to confirm/to decline)	-.050	.007	.075	-.186	**.478**
upload documents/files (in groups)	.046	-.005	.011	-.019	**.441**
write a message/to chat	.031	.046	.053	-.236	**.428**
to invite friends to like a page	.208	.146	.185	.256	.321

Notes. Factor loadings > .40 are in boldface. [1] Using the like button shows a substantial loading on the "contribution" factor, but will not be used for the respective index, as there is another loading on "content consumption."

Research question 2 (RQ2) asked for the gratification expectations going along with using features for contribution and consumption. Pearson correlations between use-intensity and gratification expectations (Table 3) indicate that both, the use of contribution and consumption features, are correlated with nearly any gratification expectation. We even find relations that theory did not propose: One of the strongest correlations, for example, is the relation between using contribution features and expecting cognitive gratifications ($r = .385$, $c_{95\%} = [.306, .458]$).

Table 3

Correlations between the intensity of using functional domains and expected gratifications

Gratification Expectations	Contribution (average intensity of using features representing the functional domain contribution)	Consumption (average intensity of using features representing the consumption domain)
personal integration	.486*** [.415, .551]	.230*** [.143, .313]
social integration	.280*** [.195, .360]	.208*** [.121, .292]
cognitive gratifications	.385*** [.306, .458]	.158*** [.069, .244]
affective gratifications	.233*** [.147, .316]	.341*** [.260, .418]
escape or tension-release	.070 n.s. [−.020, .158]	.246*** [.161, .329]

Notes: Shown are bivariate Pearson correlation coefficients. Significance levels are included for illustration: *** p < .001 (two-sided-tests), 95% confidence intervals in brackets. *Reading:* The more frequently a respondent uses features from the functional domain of contribution, the more personal integration does this respondent expect from Facebook (r = .486).

Earlier research found that Facebook in general has versatile uses. Our results support the notion that the same is true for two important functional domains: Contribution and consumption. Although these are plausible correlations, we consider our answer to RQ2 being limited in its theoretical value: There seems little differentiation in the effect that feature use intensity has on gratification expectations. As described above, we argue that differences in the gratifications are likely blurred by a general halo of *liking*.

Therefore, RQ3 seeks a different perspective on use of features. Based upon the same data like before, the relation of contribution and consumption—the *contributiveness*—allows a view that, due to its differential nature, is mostly independent from a general liking effect. The

contributiveness is computed in such a way that more positive values indicate a preference for contribution over consumption. The point of equal use intensity is neither of research interest, nor can our measures identify it. For reasons of comparison, we also include the mathematical counterpart of the differential measure: The participation intensity describes the overall intensity with that features from the two domains are used (but it does not include gaming and the management of friends and groups).

Bivariate correlations between contributiveness and each gratification expectation show more differentiation than before (Table 4): Contributiveness is correlated only with cognitive gratifications, and personal/social integration, but not with affective gratifications or escape/tension-release. The more general participation intensity, on the other side, correlates indistinctly with each gratification: Higher gratification expectations are related to higher use intensity with little differentiation between the (theoretically very different) gratifications.

Table 4

Correlations between gratifications and either participation intensity or contributiveness

Gratification Expectations	Contributiveness	Participation Intensity
personal integration	.306*** [.222, .385]	.366*** [.286, .441]
social integration	.155*** [.067, .241]	.275*** [.191, .356]
cognitive gratifications	.284*** [.200, .364]	.278*** [.193, .358]
affective gratifications	.026 n.s. [−.063, .115]	.373*** [.293, .447]
escape or tension-release	−.062 n.s. [−.150, .028]	.224*** [.138, .307]

Notes: *** $p < .001$ (two-sided-tests), 95% confidence intervals in brackets.

To test this (non-)differentiation for statistical significance, two hierarchical regression models are created, each using two steps. It is obvious that use-intensity and gratification expectations cause one another with no clear causal direction. For the regression models, the gratification expectations shall explain the use-manner (contributiveness and participation intensity). In the first step of both models, this use-manner is explained by an unidimensional index of gratification expectations (general linking). This index was created by averaging the five gratification expectation indices (the index is nearly identical to the 5 aspects' principal component with $r = .998$, see Table 7 in the appendix for bivariate correlations). The strength of the relations (R^2) observed in step 1 is the reference for step 2. In the linear regression models, the general expectations explain 20.8% ($p < .001, \beta = .458$) of the variance of participation intensity, and 4.2% ($p < .001, \beta = .211$) of contributiveness.

In step 2 the general expectation index is replaced by the five gratification indices. If there is differentiation in the gratifications, five indices shall explain more variance than a single index does. Yet, if the outcome variable is indistinct, regarding the gratifications, no increase shall be observed. The results are in line with out expectations: There is merely no increase in explaining participation intensity ($R^2 = 21.2\%$, p $< .001$, $\Delta R^2 = 0.4\%$, $F = 1.67$, n.s.), but a significant increase in explaining contributiveness ($R^2 = 14.1\%$, $p < .001$, $\Delta R^2 = 9.8\%$, $F = 14.7$, p $< .001$). This supports the hypothesis that absolute use-intensity is mostly related to some general liking, while the individual contributiveness very much depends on *what* a user expects from Facebook.

5. Conclusion

The primary aim of this paper was to demonstrate that patterns underlying the use of social media features resemble theoretical concepts (RQ1). On Facebook we found five sets of features that are typically used together, and we interpret them as the functional domains of (1) content consumption, (2) content contribution, (3) friend management, (4) group coordination, and (5) gaming. This paper argued that measuring the use of single features, and calculating the intensity-of-use for functional domains from them, provides a rich measure for how a person uses social media. The measure is rich in three aspects. The first on is to provide differentiation regarding the use of a social media service's different facets. This is important because there is no *the Facebook*, instead there's a collection of different functions under the label *Facebook*. Depending on what functions a person makes use of, the service may be perceived very different, affording individual uses related to specific gratifications.

While there are relations between the use-intensity of functional domains and the individual perception of gratifications (RQ2), there is little differentiation between different gratifications. It seems that a *general liking* of the service causes a halo effect that affects both, the intensity with that (many) functions are used and the perceptions of (all) gratifications. This problem highlights the second advantage of measuring the use of features. Using the same scale to measure the use-intensity of different features allows for the creation of differential measures. *Contributiveness* was presented as example for a differential concept, describing the relation between contributing content to, and consuming contents from a social network. Using this differential measure controls for the *general liking*, which gave substantial distinction and meaning to the relation between use-patterns and gratifications (RQ3). Of course, there's a series of options to control for the liking halo, not discussion in this paper, including regression models.

We chose the differential concept, because *contributiveness* has a tangible meaning regarding social networks and the (social) roles of their nodes. Our data shows that the relation between contributing and consuming content on social media correlates with the perception of personal and social integration, and cognitive gratifications, but not with affective gratifications of escapism. This is surprising insofar as *speaking up* on a social networking site has often been related to building an online identity (Amichai-Hamburger & Vinitzky, 2010; Guadagno, Okdie, & Eno, 2008), but not to cognitive gratifications.

The third aspect, making feature use-intensity a rich measurement base, is comparison between different social media services. Media competition has been a driver of uses-and-gratifications research (for an overview see Rubin, 2009) and still is (Dimmick, Chen, & Li, 2004; Phua, Jin, & Kim, 2017), although structural dissimilarity between social media platforms has become a substantial limitation for comparison. Yet, platforms often provide similar functional domains, even when their overall feature sets are very different. The contribution of contents, for example, is very central to social media, and can be found on Facebook, Twitter, Instagram, etc. The features providing the contribution domain are somewhat different on each platform, having different names, and they may change over time. Yet, measuring the intensity with that they are used allows for conclusions about how much a user contributes to the network.

6. Discussion

The abstraction from *features* to *functional domains* finally allows for a decomposition of social media platforms. We consider this decomposition a promising approach to pierce the boundaries between contemporary, multi-functional media services: For most theories it does not matter if users discuss an article on Facebook, Twitter, or a bulletin board. Understanding social

media as package of functional domains (a) allows a better understanding for the entangled use of the platforms (Brandtzæg, 2012), and (b) clarifies in which aspects (i.e., functional domains) these platforms compete, and in which they don't. Yet, the data presented in this paper is limited to Facebook—a research case chosen for its broad range of features, that is still perceived as an enclosed service.

Comparison of use-intensity across platforms is, of course, generally limited by qualitative gaps. Contributing to Facebook typically means sharing content and producing short text messages like status updates and comments. This long tail of user-generated-content is unsimilar to the production of sophisticated content like elaborate videos, articles, or blogs.

The concept of functional domains is a contribution to uses-and-gratifications theory insofar that it provides a concept for structuring the *uses* part. While gratification dimensions have been subject to several studies, little is been known about the uses stemming from a service's features (and other affordances, Gibson, 1979; Hutchby, 2001). Functional domains relate to actual use and the fulfillment of practical tasks (will two services compete for solving the same problems?) while gratifications—although the definition of uses against gratifications has often not been formalized—often relate to the psychological outcomes (will two services compete for giving the same gratifications?). To give an outlook, sought uses have the potential to explain *task-related media use* better than sought gratifications. At the same time, according to the decomposition approach, sought gratifications may better explain the use of certain functions than the use of a multifaceted online service.

Obviously, asking for the use-intensity of a series of features requires more questions than asking for the overall use-intensity of a service. Yet, the amount of questions can be reduced by early excluding features that respondents do not use at all. The practical advantages of

measuring use by the use of features than are (a) that these are well-defined, factual questions that users can usually give reliable answers to, and (b) that the measure can easily be adapted to changes within a platform, and to new platforms. A limitation of our study regarding the first point is, that we cannot specify the answers' validity, as no usage data was available for comparison. We also did not screen the content produced by the respondents and analyze their actual contribution in terms of amount and quality.

Our focus was on the functional domains of contribution and consumption, because those domains seamlessly fit into existing theory. The dimensions friend management, group coordination, and gaming might be no less important for understanding the use of Facebook. We shall also emphasize that our definition of functional domains is based on empirical coincidence of feature use intensity. While this ensures to compare like with like, other research questions may require features to be structured differently. Finally, we make no claim that these functional domains were complete. They are based on a convenience sample, which is known for being biased, especially regarding their age, education, and gender—and they are likely not representative in their Internet use and social web behavior. Our study, further, excluded Facebook non-users who might have deliberately chosen not to use Facebook. Therefore, our sample is systematically biased in favor of satisfied users, reporting high levels of gratification, which might amplify the liking effect that we have observed. The liking effect could also be increased by the general problem that respondents may report generalized believes about Facebook instead of indicating their personal gratification expectations (Perse & Ferguson, 1993; Scherer & Schlütz, 2004).

Our survey's administration period was from the 11th to 25th of January 2016. Only one month later, Facebook added "emojis" to the well-known like button. Although this infringed the

currentness of our data, it emphasized our results. First, our factor analysis had marked the like button as feature with lots of uses, so a differentiation seems a logical step. Second, it demonstrates the conceptual strength of functional domains over single features in order to make social media research more independent from platform changes.

7. Appendix

Table 5

Overview of gratification expectations and respective sources

Relaxation (Burke et al., 2010; Lin, 1993; Quan-Haase & Young, 2010; Scherer & Schlütz, 2002, 2004; Schorr & Schorr-Neustadt, 2000; Smock et al., 2011; Wolfe & Fiske, 1948; Yoo, 2011)

 … because I want to take a break.

 … because it makes me ease off.

 … because it relaxes me.

 … because it helps me to forget my problems.

Pastime (Choi, 2016; Lin, 1993; Park & Lee, 2014; Quan-Haase & Young, 2010; Scherer & Schlütz, 2002, 2004; Schorr & Schorr-Neustadt, 2000; Sheldon, 2008; Smock et al., 2011; Yoo, 2011)

 … to kill time.

 … because I am bored.

 … to have something to do.

 … to occupy myself.

Social interaction (Park & Lee, 2014; Sheldon, 2008; Smock et al., 2011; Tosun, 2012; Whiting & Williams, 2013; Yoo, 2011)

> … to get to know like-minded people.

> … to keep in touch with friends and acquaintances who live nearby.

> … to keep in touch with friends and acquaintances even if they live far away.

> … to re-establish contact with old acquaintances.

Communication (Quan-Haase & Young, 2010; Raacke & Bonds-Raacke, 2008a; Sheldon, 2008; Tosun, 2012; Whiting & Williams, 2013; Yoo, 2011)

> … to communicate with more than one person at the same time in groups or chats.

> … to exchange with my friends and my family.

> … to contact persons with whom I haven't been directly involved yet.

Entertainment (Choi, 2016; Levy & Windahl, 1984; Lin, 1993; Palmgreen, Wenner, & Rayburn, J. D., 1980; Park & Lee, 2014; Quan-Haase & Young, 2010; Scherer & Schlütz, 2002, 2004; Schorr & Schorr-Neustadt, 2000; Sheldon, 2008; Smock et al., 2011; Tosun, 2012; Weissensteiner & Leiner, 2011; Whiting & Williams, 2013; Yoo, 2011)

> … because it is entertaining.

> … because it is fun.

> … because it is exciting.

> … because I enjoy the games and other apps.

Information (Choi, 2016; Levy & Windahl, 1984; Palmgreen et al., 1980; Park & Lee, 2014; Smock et al., 2011; Yoo, 2011)

> … to inform myself about certain topics.

> … to receive advices and recommendations.

... to learn about information at first hand.

... to encounter arguments to different views.

... to share information that could be relevant for others.

... to give good advice based on my experiences.

... to inform as many friends as possible at once about changes in my life (i.e.

relationship status, change of residence).

Self-portrayal (Choi, 2016; Park & Lee, 2014; Raacke & Bonds-Raacke, 2008a; Smock et al.,

2011; Whiting & Williams, 2013)

... to express who I am.

... to share my views, opinions and moral concepts.

... to inform others about my interests.

Escapism (Quan-Haase & Young, 2010; Scherer & Schlütz, 2002; Schorr & Schorr-Neustadt,

2000; Smock et al., 2011; Tosun, 2012; Whiting & Williams, 2013)

... to escape from everyday life.

... to get away from other things.

... to get away from my responsibilities.

Social surveillance (Choi, 2016; Palmgreen et al., 1980; Raacke & Bonds-Raacke, 2008a;

Scherer & Schlütz, 2002, 2004; Schorr & Schorr-Neustadt, 2000; Sheldon, 2008; Yoo, 2011)

... to learn more about others.

... to look at photos, videos or status updates of my friends.

... to compare myself to others.

... to stay up-to-date.

Table 6

Crosscorrelations between use of functional domains on Facebook

	Contribution	Consumption	Gaming	Friend mgmt	Group coord
Contribution		.339	.227	.363	.385
Consumption	.339		.053	.329	.383
Gaming	.227	.053		.146	.064
Friend mgmt	.363	.329	.146		.384
Group coord	.385	.383	.064	.384	

The use intensity of a domain is the mean use intensity of features within that domain. Crosscorrelations are based on responses from N = 482 respondents.

Table 7

Crosscorrelations between the gratification expectations

	cognitive grati-fications	affective grati-fications	social integra-tion	personal inte-gration	escape or ten-sion-release
cognitive grati-fications		.304	.339	.491	.124
affective grati-fications	.304		.411	.364	.487
social integra-tion	.339	.411		.344	.154
personal inte-gration	.491	.364	.344		.230
escape or ten-sion-release	.124	.487	.154	.230	

Crosscorrelations are based on responses from N = 482 respondents.

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