Need Fulfillment and Experiences on Social Media: A case on Facebook and WhatsApp

ABSTRACT
With an increasing inflow and outflow of users from social media, understanding the factors the drive their adoption becomes even more pressing. This paper reports on a study with 494 users of Facebook and WhatsApp. Different from traditional uses & gratifications studies that probe into typical uses of social media, we sampled users’ single recent, outstanding (either satisfying or unsatisfying) experiences, based on a contemporary theoretical and methodological framework of 10 universal human needs. Using quantitative and qualitative analyses, we found WhatsApp to unlock new opportunities for intimate communications, Facebook to be characterized by primarily non-social uses, and both media to be powerful lifelogging tools. Unsatisfying experiences were primarily rooted in the tools’ breach of offline social norms, as well in content fatigue and exposure to undesirable content in the case of Facebook. We discuss the implications of the findings for the design of social media.

Author Keywords
Human needs; User Experience; Facebook; WhatsApp

ACM Classification Keywords
H.5.m. Information interfaces and presentation (e.g., HCI).

INTRODUCTION
As social media have diffused widely in society, with estimates of nearly one in four people worldwide using them [15], researchers have opted to understand the human experiences they mediate, and the factors that drive their widespread use (e.g., 6, 14, 19, 22).

This is increasingly important as we witness users’ migrating across communities while we lack a clear understanding of the reasons that drive those transitions. Facebook, ranked as the most successful online community, and the 2nd most visited website¹ globally (consulted in January 2014), has recently seen an outflow of users with increasing reports of negative experiences resulting from its use, especially among teenagers [7, 35]. At the same time new social media, such as WhatsApp, have seen a dramatic growth, with reports suggesting an increase of up to 1 million users per day, reaching a number of 600 million users in 2014 with a daily engagement higher than the industry standard [17].

Facebook and WhatsApp do not necessarily compete, and in fact, researchers have argued that users adopt a wide range of tools on a daily basis [33]. Yet, they are likely to satisfy different needs and provide distinct experiences to their users. Thus, an analysis of users’ experiences with these two social media and the needs they fulfill is likely to shed light into the inflow and outflow of users from the two social media.

Prior work has found Facebook to satisfy a wide range of needs, from keeping up with old and making new friends [13, 22, 34], to acquiring information about events or individuals through surveillance and social browsing [13, 22, 45] and leveraging individuals’ self-esteem through the portrayal of their ideal image [13]. Recent work on WhatsApp and other instant messaging applications has found such services to support a more intimate and private way for members to communicate with friends, better fulfilling the fundamental need for relatedness. The majority of this research has taken a ‘uses and gratifications’ approach (U&G, see [22]) where individuals are surveyed about their typical uses and reflect on the needs these uses address. Qualitative content analyses then identify the most salient needs users seek to satisfy through their use of the particular media.

In this paper we take an alternative approach to the study of the needs that social media satisfy, relying on a theoretical framework and methodological approach proposed by Sheldon et al. [40]. This makes our study different from U&G studies in two ways.

First, rather than deducing needs from participants’ qualitative accounts, we employ a validated framework of 10 universal human needs, such as the need for relatedness, competence and popularity [40]. This enables the quantitative study of need fulfillment in users’ experiences with social media and the impact this has on individuals’ behaviors – in terms of their intensity of use.

Second, rather that focusing on typical use, Sheldon’s et al. [40] approach asks from participants to focus on a single recent memorable (positive or negative) experience. This has a number of implications. First, it minimizes recall and selection biases as, when people recall recent concrete episodes, they are more likely to tap into episodic memories and introspect on the “felt experience” [26], rather than report on what is considered to be a typical use of social

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¹ www.alexa.com web information service (traffic ratings)
media (see [37] for a review of affective memory). Second, by focusing on the memorable rather than the typical, it samples a distinct aspect of our experience with social media. While much of our attitude towards social media may be shaped by our day-to-day use, outstanding, memorable experiences may as well be shaping our attitudes in ways we haven’t yet understood. Focusing on such outstanding experiences may provide a new perspective to the inquiry of users’ experiences with and need fulfillment through social media.

**BACKGROUND**

Need theories have been a long-standing topic in psychology and have also recently played a central role in understanding users’ experiences with technology. In this section we review prior work on two theories: 1) uses & gratification, a communication theory that has recently been employed in understanding users’ experiences with social media, and 2) a model of 10 universal human needs that is used as a methodological lens in our study.

**Uses and Gratifications Theory**

Uses & Gratification Theory (U&G) is an approach to understanding why and how people actively seek out specific media to satisfy specific needs [39]. U&G studies typically ask participants to self-report on their typical uses of the media and the gratifications they derive from them.

**Facebook studies**

U&G theory has been applied across a wide range of media. More recently, researchers have successfully employed the U&G theory in their attempt to understand the gratifications users derive from their use of Facebook. Typical benefits users acquire from Facebook tap to their needs for relatedness and social interactions, through supporting relationship maintenance and "staying connected" [13], as well as making new connections [34]. Next to social needs, Facebook has been found to provide content gratification and is commonly used as a source of information either to search and learn about events [13, 34], or even to acquire and track information on members through surveillance and social surfing. [22, 45]. Other studies have highlighted a wider range of gratification, tapping to individuals need for pleasure, escapism and the alleviation of boredom [13] as well as to satisfy their self-esteem through the portrayal of their ideal image. [13, 45]

**Instant messaging studies**

Using the same perspective, Quan-Haase [33] compared Facebook to Instant Message (IM) applications with respect to the extent to which they fulfill different user needs. Their study suggests a similar gratification profile for both media with similar uses and fulfilling similar communication, sociability and pleasure/stimulation needs. Yet, they noted that the key distinctions between Facebook and IM were brought by from their use. For instance, while IM requires social interaction among its users to acquire social information, Facebook broadcasts such information to its entire network. Furthermore, IM’s near-synchronous and private communication channels provides their users the ability to engage in more intimate communication, emulating in-person conversations, allowing for intimacy and a sense of connection, whereas Facebook tends to support the exchange of short messages.

Church and Oliveira [9] further studied the factors that influence the acceptance, usage and growing popularity of WhatsApp. Similar to [33], they found social influence to be one of the main reasons for the adoption of WhatsApp, and remarked that the nature and the intent of WhatsApp supports social, informal and conversational communications which lead to high frequency of use.

**Sheldon’s framework of human needs**

Sheldon et al. [40] aimed at deriving a list of universal human needs. Starting from Ryan and Deci’s [36] Self-Determination Theory and the "big three": autonomy, relatedness and competence, they elaborated to a more fine grained list and proposed a list of 10 universal human needs, using two criteria. First, needs should be salient within individuals’ most satisfying experiences. Second, their fulfillment should promote psychological thriving, as measured through the experiencing of positive affect. The 10 needs they derived were: autonomy, competence, relatedness, self-esteem, self-actualized meaning, physical thriving, pleasure, stimulation, security and money-luxury. Along with the theory, Sheldon et al. [40] propose a methodological framework that asks participants to recall and narrate a recent, outstanding experience, satisfying or unsatisfying, and employs a validated questionnaire that measures need fulfillment for each of the 10 needs, during this recalled experience. Sheldon’s et al. [40] theory has recently been used within HCI [e.g., 20, 32, 43], where a clear link has been established between need fulfillment and positive experiences with technology.

**STUDY**

The current study aimed to understand users' behaviors and experiences on social media. We selected Facebook and WhatsApp due to their widespread use, yet different character, thus making it likely to uncover different use and need fulfillment profiles among the two media.

**Recruitment**

Participants were recruited to an online survey through Amazon Mechanical Turk and offered $1.5USD for their effort. They were randomly assigned to Facebook or WhatsApp and to one of two conditions – reporting either a satisfying or unsatisfying experience.

**Participants**

A total of 494 participants completed successfully the study (Facebook: N=240, 129 male, 111 female, Median age = 30y, WhatsApp: N=254, 166 male, 88 female, Median age = 27y). The majority of participants (64%) reporting on Facebook had used the tool for over four years, while most reporting on WhatsApp had used the tool for less than two
years (74%). Over 60% of our participants had a US nationality, 30% Indian, and less than 10% had a nationality of a third country.

**Reporting a memorable experience**
Following Sheldon’s et al. [40] methodology (see also Hassenzahl et al. [20] for an application within HCI), we asked participants to recall and narrate a recent outstanding experience they had with the tool (satisfying or unsatisfying), and to describe its context (i.e., how and when this happened, how they felt and what made this event particularly satisfying or unsatisfying.

**Need fulfillment**
For each reported experience, we asked participants to rate the experienced fulfillment of six needs (competence, relatedness, pleasure, security, self-esteem and popularity) using a questionnaire we adapted from Sheldon’s et al. [40]. Physical thriving was excluded due to its low relevance to the context. Luxury was excluded due to its marginal significance even in the studies of Sheldon et al. [40]; autonomy and meaning were excluded as they could be understood rather as an outcome of need fulfillment than a need in itself. Each need was captured with three items (18 in total). Participants responded on five-point scales ranging from not at all to extremely. Internal reliability for all scales was satisfactory (see Table 1, diagonal). Table 2 further shows the interscale correlations. While in many cases substantial (average interscale correlation=0.41), they are always below the internal consistency.

**Intensity of use**
Participants’ intensity of use of Facebook and WhatsApp was measured through a reduced version of Ellison’s et al. [14] Facebook Intensity Scale, using the following four items: “X is part of my everyday activity”, “I am proud to tell people I'm on X”, “X has become part of my daily routine”, and “I would be very sorry if X shut down”. The remaining items of the original scale were excluded as they did not apply or might lead to different interpretations on Facebook and WhatsApp. Internal reliability of the adapted scale was good for Facebook (Cronbach’s α=0.87) and excellent for WhatsApp (α=0.92).

### Table 1. Sheldon’s [40] categories along with their description, interscale correlations and internal reliability (diagonal)

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<tr>
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<tbody>
<tr>
<td>Competence</td>
<td>Feeling that you are very capable and effective in your actions rather than feeling incompetent or ineffective</td>
<td>(0.84)</td>
<td></td>
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<tr>
<td>Relatedness</td>
<td>Feeling that you have regular intimate contact with people who care about you rather than feeling lonely and uncared of</td>
<td></td>
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<tr>
<td>Pleasure</td>
<td>Feeling that you get plenty of enjoyment and pleasure rather than feeling bored and understimulated by life</td>
<td>0.29 (0.91)</td>
<td></td>
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<tr>
<td>Security</td>
<td>Feeling safe and in control of your life rather than feeling uncertain and threatened by your circumstances</td>
<td>0.47 0.44 (0.87)</td>
<td></td>
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<tr>
<td>Self-esteem</td>
<td>Feeling that you are a worthy person who is as good as anyone else rather than feeling like a “loser”</td>
<td>0.28 0.37 0.33 (0.81)</td>
<td></td>
</tr>
<tr>
<td>Popularity</td>
<td>Feeling that you are liked, respected, and have influence over others rather than feeling like a person whose advice or opinion nobody is interested in</td>
<td>0.36 0.13 0.35 0.50 (0.93)</td>
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### DATA ANALYSIS
Participants submitted a total of 494 experience narratives (each participant submitting one narrative) with an average length of 70 words (median=69, SD=33). We submitted those narratives to a traditional qualitative content analysis using open and axial coding techniques [1], with the goal of understanding the social practices that surrounded the use of the two social media tools and the experiences these practices mediated on users. In addition, we examined participants’ ratings for each reported experience with respect to the saliency of each of the six needs.

### FINDINGS
A one-way ANOVA with intensity of use as the dependent variable and tool (Facebook vs WhatsApp) and condition (reporting on satisfying versus unsatisfying experiences) revealed no significant main effect for tool, F(1,478)=3.0, p=0.08, h²=.11, but a significant effect for condition, F(1,478)=60, p<.001, h²=.11, and a significant interaction between condition and tool, F(1,478)=6, p<.01, h²=.01.

Overall, while a significant difference was found in the self-reported intensity of use of WhatsApp and Facebook for people reporting satisfying experiences, with WhatsApp users’ reporting higher intensity of use, no significant difference was found in the intensity of use of the two tools amongst people reporting unsatisfying experiences (see

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**Figure 1. Self-reported intensity of use for Facebook and WhatsApp, for the two conditions of the study.**
In the next sections we analyze satisfying and unsatisfying experiences separately and attempt to understand the needs these the two tools fulfill.

**Satisfying experiences**

Figure 2 displays the experienced need fulfillment in participants’ reported satisfying experiences. While both Facebook and WhatsApp exhibit a similar profile with relatedness and self-esteem being the most fulfilled needs, significant differences are found between the two tools with respect to two needs: relatedness, WA: mean=4.3, SD=0.8, FB: mean=4.0, SD=1.0, t(246)=2.2, p<0.05, and popularity, WA: mean=3.5, SD=1.1, FB: mean=3.2, SD=1.2, t(246)=2.3, p<0.05.

![Figure 2. Need fulfillment for Facebook and WhatsApp among participants reporting satisfying experiences](Image)

Multiple regression analyses were used to test which, if any, of the needs significantly predicted participants’ self-reported intensity of use. For WhatsApp, relatedness was the single significant predictor of intensity of use ($\beta=0.56$, $p<.001$), explaining 11% of the variance ($R^2=0.15$, $F(6,121)=3.7$, $p<.01$). For Facebook, self-esteem was the single significant predictor of intensity of use ($\beta=0.31$, $p<0.01$), explaining 12% of the variance ($R^2=0.17$, $F(6,110)=3.7$, $p<.01$).

These results highlight the different nature and social needs Facebook and WhatsApp fulfill. In the next two sections we perform a qualitative analysis of participants’ experience reports with the goal of understanding the social practices that surround the use of these tools and the experiences these mediate.

**Satisfying experiences with WhatsApp**

Overall we found users’ satisfying experiences with WhatsApp to tap to its ability to afford intimate synchronous communications, to support them in crafting desired experiences on recipients, in making distant individuals feeling present in a significant life event, as well to support them in collective lifelogging practices.

**Loosing track of time with intimate communications**

In agreement with prior work we found WhatsApp’ to better afford intimate communications than Facebook [21, 33]. While both tools allowed for synchronous communication, Facebook provided better ability for multitasking, which in turn afforded asynchronous communication practices. On the contrary, in WhatsApp’s restricted environment users experienced a heightened sense of presence in the communication, due to their building of anticipation as they waited for the other party’s response, but also due to their ability to express their emotions and experiences through smileys, images and voice memos, e.g.:

“I was friends with this one girl…. I told her I’d download it [WhatsApp]… For whatever reason, we got into a really heavy conversation about our lives, goals, dreams, all the big issues. It was really nice to be able to have that kind of deep, meaningful conversation with her and I learned a lot about her.”

**Crafting communication experiences**

Next, we found some of WhatsApp’s features, such as its voice memo feature, to provide users with the ability to craft a desired experience on the recipient, through crafting the content or the timing of a communication. A powerful example was the one of a father, whose daughter went on her first trip with friends from college. As she left, he sent her a voice memo reflecting on her childhood and her affairs. The ability to craft the message and its timing on WhatsApp allowed the father to express his emotions, without the interruptions and the uncomfortable feeling that might occur in a face to face or other synchronous communication, while enabling him to iterate on the content creation till the optimal result is achieved for his daughter. At the same time, this relieved his daughter from the anxiety relating to her response, that would exist in a synchronous communication, thus allowing her to focus on the voice message and thus providing a more vivid experience.

A wealth of similar satisfying experiences were reported both from senders and recipients, relating to WhatsApp ability to craft the content (e.g., through pausing or reshooting the voice message) as well as the timing of the message (e.g., friends sending a voice memo or photos for birthday wishes right after 12pm, or parents sending a supporting message to their kid right before she or he opens a university acceptance letter):

“(…) for my last birthday I was out (…) surprisingly sharp 12 o’clock I received a video (…) I felt very happy after seeing that video. All my friends celebrated my birthday by cutting cake, and sending wishes (…) That birthday was very special to me forever.”

**Being there**

An interesting practice that emerged from our data was the one of near-real-time sharing of an event as it unfolds, through rich media such as photos, videos and voice memos, to make someone separated by distance feel present in the event, e.g.:
“The single most satisfying moment was sharing my aunt’s 90th birthday party as it was happening. It was lovely to be there, although only in a virtual way. It felt real. We cried and laughed and it was lovely”. “My sister was planning a wedding... my great uncle got sick and couldn't travel. He's always been like a father to us, and everyone wanted him to be there... I sent him a combination of photos and videos almost every 2 minutes. And created a family message for him. I used it throughout the entire event, and the reception too. It meant so much that he was able to be there, and enjoy it with us. Even though he couldn't travel.”

In other contexts, WhatsApp was used as an awareness technology, providing reassurance to distant family members [5], when for example one of the members of the family was undergoing a risky operation:

“My mother had to undergo a very risky operation. I was on edge the entire day. I could not focus in any of my classes... I felt awful that I could not be with my family as they waited for the results and when I got the all clear through WhatsApp I felt as if the weight of the entire world was lifted off of my shoulders.”

Lifelogging
Interestingly, we found participants to use WhatsApp, not only as a communication tool, but also as a lifelogging tool. A common practice was the creation of a family group where important life events, such as the first words of a baby or moments of a wedding, were shared among all family members, e.g.:

“Most cherished moment is when my cousin started to speak ... he was looking so cute and his voice so heart touching... I still have this video in my phone; whenever I remember him I just watch those videos again & again.”

This form of lifelogging displays a number of interesting properties. First, rather than being personal, it is a shared corpus, with input coming from different members. Second, its content entails purpose and authorship as it is captured from someone, directed to someone, and shared with a particular purpose (e.g., making one’s family feel present in her life). Third, the resulting social interactions that take place around the lifelogs further augment the experience of revisiting the lifelogs and increase one’s motivation for doing so.

Interestingly, such lifelogging practices took place even among co-located individuals, attending the same event. This practice denoted not only a form of collective lifelogging, but also a form of participation to a second thread of the event, unfolding in the online space.

Satisfying experiences with Facebook
Contrarily to WhatsApp that afforded intimate social interactions, users’ most satisfying experiences with Facebook mainly stemmed from its support for expressing one’s self, and from supporting their interactions with weaker ties. We also found Facebook to afford life-logging practices along with the added value that the accrued metadata [30] brought to them.

A stage for self-expression
Similar to prior work [13, 45], we found a significant part of users’ most memorable, satisfying experiences with Facebook to relate to its support for expressing one’s self, such as her beliefs, actions, accomplishments and skills (e.g., paintings), and the associated signs of social acceptance and popularity that they received from these acts, e.g.:

“(…) I decided to make my ‘announcement’ on Facebook that I’d be accepting the offer - this came with a lot of ‘likes’ and congratulatory messages. It was a pleasing experience!” “One time I posted a new picture of me. (…) I was dressed very nice. (…) I got over 60 likes. It was the most likes I got from any picture. It was a personal record. It was a great feeling.”

Social Surveillance
Interestingly, even though our survey asked for outstanding, memorable events, a significant part of users’ experience narratives related to what is often depicted as a mundane daily use practice on Facebook: social surveillance - the act of tracking the actions, beliefs and interests of one’s acquaintances [24]. Social surveillance would often serve to keep up with life changes in one’s friends, to learn new information from shared posts, or even to stalk on people and compare the life development to those of their acquaintances, e.g.:

“A good friend of mine studied abroad (...) It was hard for us to stay in touch (...) I smiled when I saw her looking happy and beautiful, (...) It made me realize how much she had changed, and I felt proud of her and glad I could witness it.” “(…) She had the most amazing photographs (...) she is the only real reason I am motivated to check on Facebook. Seeing where she is and what she is doing in her updates is fun since we no longer live in the same city.”

To find and to be found
One of the most gratifying experiences on Facebook, which is not supported by WhatsApp, is the ability to look up for and revive lost connections. Similarly to [19], this was often associated with highly emotional, serendipitous encounters, and often provided a sense of belonging, when individuals were able to reconnect with schoolmates and others groups from the past, e.g.:

“My friend moved away from my town when we were 10 years old (...) Through mutual friends on Facebook, she stumbled upon my Facebook page and added me. We were able to catch up and become close again after being separated. Without Facebook, I do not think that would have ever happened”
Social capital and interactions with like-minded people
Next, users’ memorable, satisfying events related to Facebook’s support for interaction with like-minded people. This manifested in a number of ways, such as social browsing - the development of new relationships sometimes with the aim of meeting offline [24], e.g.: “(...) It sounds silly, but Facebook has really changed my life. It led me to meeting the girl of my dreams who was always right in front of me. (...) Who knew a website would end up changing our lives forever?”, or supporting social interactions among like-minded people while leveraging the social capital, both online and offline, through the participation in online communities, looking for social support as in health-related communities, technical how-know (e.g., a community relating to farming techniques), or purely an interaction with like-minded individuals (e.g., in a dog lovers community), or, through the organization of offline events around activities they share the same passion with (e.g., nature hiking).

Lifelogging
Last, lifelogging practices were often reported as a source for memorable satisfying experiences with Facebook. Similar to WhatsApp, we found the value of Facebook as a lifelogging tool to stem from the accrued, over time, metadata on the source material, such as likes, tags, locations and comments [30]. Different from WhatsApp, though, Facebook supports broadcasting and interacting with a larger audience, while media is structured (e.g., in albums and dashboards) and organized chronologically (i.e., timeline) on user’s profiles which provides easy access and revisiting of the material. The revisiting of such material was often of high emotional value as in the case of a mother who lost her son and revisited photos of him and others’ comments about him: “My son passed away, and I had an outpouring of support from family members, friends and people that I didn’t even know on my Facebook page. I have his pictures saved there and whenever I think about him I usually go to my page and pull them up and look at the comments about him on there. It makes me feel better and reminds of him and how much he is and we are loved.”

Unsatisfying experiences
Figure 3 displays the experienced need deprivation in participants’ reported unsatisfying experiences. While both social media display a similar profile, with relatedness being the most deprived need, significant differences were found among the tools with respect to competence, WA: mean=2.5, SD=1.2, FB: mean=2.0, SD=1.0, t(222)=3.7, p<0.001, relatedness, WA: mean=3.0, SD=1.2, FB: mean=2.6, SD=1.2, t(222)=2.2, p<0.05, and security, WA: mean=2.6, SD=1.2, FB: mean=2.2, SD=1.0, t(222)=2.3, p<0.05.

Next, multiple regression analyses were used to test which, if any, of the needs significantly predicted participants’ self-reported intensity of use. For WhatsApp, competence (β=.34, p<.01) and pleasure (β=-.40, p<.05) were the two significant predictors of intensity of use, explaining 10% of the variance (R²=.15, F(6,112)=3.3, p<.01). For Facebook, none of the needs predicted users’ self-reported intensity of use. Overall these results suggest that while for Facebook no clear root cause of reduced intensity of use is identified, reduced intensity of use in WhatsApp is linked to deprivation of users’ need to feel competence. At the same, pleasure was positively associated with reduced intensity of use, likely indicating users’ initial exploratory, non-goal-oriented, interactions with the tool. Finally, users’ unsatisfying experiences with WhatsApp were significantly more deprived with respect to competence, relatedness and security, in comparison to those with Facebook.

Unsatisfying experiences with WhatsApp
Overall, despite the strongly satisfying experiences participants reported with WhatsApp, we found the use of the tool, and the social practices it affords, to often lead to social exposure, embarrassment and conflicts among its users. The root cause of these negative experiences was often WhatsApp’s misfit to the social norms of communication. We describe below some of the most remarkable instances.

Changing the norms in real-time communications
We found the strength of WhatsApp in affording real time communications to also be a source of unsatisfying experiences. While WhatsApp altered the norm of availability, it provided limited cues regarding one’s availability to respond, often leading to incorrect inferences and conflicts among users, e.g.: “Once I was having an argument (...) and ignoring all other conversations. I was getting lots of notifications from this girl (...) she could see me online and assumed I was ignoring her (...) I replied angrily and she blocked me. I hated WhatsApp for showing me online even though I wasn’t available to talk to anyone else.”

Exposing personal content to wrong addressee
Usability problems some times lead users to expose private content, such as sending a personal photo to a wrong addressee, selecting a different than the intended video to be shared, or confusing communications during
simultaneous chatting. Not only doesn’t WhatsApp allow a user to reverse these errors, it also leaves her unaware of them, e.g.: “When I first signed up (...) I was given the option of having WhatsApp find contacts I may know (...) there was an entry with my boyfriend's first name. I simply assumed it was him and I started sending him lovey-dovey messages. He never responded to a single one of them, which had me a little irritated. After a few days I realized that the person with my boyfriend's first name was not in fact my boyfriend at all. I have no idea who I messaged and I'm afraid it may have been someone else I knew. I feel like I may have embarrassed myself.”

Unsolicited group participation

Supporting group discussions was one of the frequent sources of satisfying experiences with WhatsApp. At the same time, however, unsatisfying experiences occurred when participants were joined into group discussions without soliciting their approval; or when the system exposed them when leaving a group discussion by letting everyone else know about that, e.g.: “(...) once one of my friends added me in a group conversation with other people that I don’t want to talk to, and then they started asking me why I am not replying to the group conversation. It was quite irritating that WhatsApp let them get me in the group without asking me first.”

Monitoring other people

Last, unsatisfying experiences were frequently rooted in monitoring practices and the conflicts these induced. WhatsApp features of notifying the other party if one is online and when a message is read, along with the lack of support for plausible deniability [42], often led to conflicts and were remarked by participants as undesirable features. For instance, providing assertive time information regarding the last time one was seen online, enabled the monitoring of one’s activities by her contacts, e.g.: “I got into this big time argument with my girlfriend because I was online at 4am and she confronted me on the chat asking me why I was online at that hour. It was quite frustrating because she kept assuming I was holding some sort of secret from her.”

Unsatisfying experiences with Facebook

We found users’ unsatisfying experiences with Facebook to be primarily rooted in content fatigue and exposure to undesirable content through surveillance, as well as, similarly to WhatsApp, Facebook’s breach of offline social norms regarding the dissolution of relationships and the exposure of others’ identities.

Content fatigue

One of the frequent sources of unsatisfying experiences with Facebook stemmed from content fatigue [10], for instance, when heated debates took place prior to political elections, e.g.: “The Presidential election campaign is the most unsatisfying event I have had with Facebook (...) For months, the newsfeed was full of negative political arguments. I made many 'friends' invisible. Seriously toxic climate.”, or when individuals were seen as portraying idealized self-identities, e.g.: “(...) watching people post things that in a sense seem fake. It seems people post things to make their lives look perfect and basically brag about the things they do. But in a sense it makes others feel like they're not keeping up with life. I try to avoid reading very much on Facebook for this reason...mainly just keep up with the people I'm closest to... else it will just bring me down.

Similar to prior work, we found instances of individuals comparing their life accomplishments to those of their contacts [8], some times leading to diminished life satisfaction and self-esteem [23], e.g.: “(...) I also became Facebook friends with another former roommate. He is now a VP of a big tech company and when he posts it is usually from an exotic and/or luxurious hotel in a far away location. I end up feeling down about my life and how it has gone.

Surveillance

As in prior work [11, 28] users’ practices of surveillance were often cited as a cause for unsatisfying experiences when individuals witnessed undesired social information by chance, as in the case of a participant who discovered he had been lied to by his employee, e.g.: “I was unsatisfied when an employee called in sick, then posted on her Facebook about an event that she had gone to that same day - a concert. Obviously she wasn’t sick. This made me pretty upset with the individual (...)”.

Unfriending

The dissolution of friendships, although a common behavior in Facebook [25], was often a source for unsatisfying experiences and diminishing self-esteem, e.g., “I felt like a loser that she unfriended me and made me feel sad”. Similar to [41] we found changes in offline relationships to be the primary reason for the online dissolution of a relationship. However, different from offline where the dissolution takes place naturally, on Facebook this required an explicit and definitive act [4], e.g.: “(...) I had to see post pictures of the two of them together. It was like a punch in the gut. I removed her from my friends list (...) Fortunately she wasn’t a close friend so I doubt she noticed”.

Untagging

Last, a frequent source of unsatisfying experience related to Facebook’s lack of a-priori control of one’s self-identity. For instance, through tags, mentions and group photo posting, users could breach others’ privacy and expose their identities without prior acceptance [3]. This practice often led to feelings of embarrassment and humiliation, e.g.: “Once my friend posted a pic of me sleeping with a baby cap on my head. There was lot of comments and I was humiliated a lot as a result of it”.

DISCUSSION

WhatsApp affording intimate communications
Sherry Turkle [44] argues that we “turn to technology to make us feel connected in ways we can control”. Tools such as Twitter, Facebook and instant messaging, provide us the control over what and how we communicate. But this has an enormous cost: we lose our capacity to communicate in f2f where this control no longer exists.

While we agree with Turkle’s [44] observation, we found WhatsApp to unlock new opportunities for intimate communications that are not present in f2f and other synchronous communication channels. For instance, WhatsApp supported individuals in crafting highly emotional personal messages (as in the case of the father’s message to his daughter), not only removing the social anxiety present in f2f [46], but also supporting them in crafting an optimal as well as archival communication experience. Next, established social practices such as the near-real-time sharing of an event with rich media enabled separated individuals to feel present in important life events, as in the case of the participant’s virtual participation in her aunt’s birthday, which she characterized as ‘feeling real’. In the same vein, despite the absence of non-verbal cues [27], we found users to experience a heightened sense of presence in communications, likely due to WhatsApp’s restricted environment that afforded single-tasking as well as its capacity for rich emotional expression through smileys, images and voice memos.

Social media as lifelogging tools
Next we found WhatsApp and Facebook to be used as lifelogging tools. Contrary to users’ emerging photo-taking practices and recent research with the Sensecam prototype, that has lead to significant challenges with respect to the access and revisiting of the ever-increasing photo collection [12, 38, 47], we found the two social media to effective support users in storing, revisiting and reminiscing about past events. Different from traditional lifelogging practices, lifelogging practices on Facebook and WhatsApp entailed a purpose and authorship, and the resulting social interactions around the lifelogs, through commentaries, likes and tags, would further augment the experience and users’ motivation of revisiting the lifelogs. These accrued, over time, metadata, were often a significant part of the experience to be reminisced. Interestingly, we found WhatsApp to afford a practice of collective lifelogging, whereas collocated individuals would capture and share their own perspective of the unfolding event, thus making their contribution to a shared repository but also participating to a second thread of the event, that was unfolding in the online space.

Facebook is not that social after all
Contrary to WhatsApp, we found users’ most satisfying experiences with Facebook to relate to practices that were not social in nature, and WhatsApp overall provided significantly higher levels of need fulfillment with respect to relatedness. Yet, while Facebook may have better afforded information gratification through social surveillance, one would expect this to lead to heightened fulfillment of pleasure-stimulation in comparison to WhatsApp; this did not happen.

Similarly, one would expect Facebook to provide a stronger sense of self-esteem and popularity through supporting self-expression and leveraging individuals access to social capital [6, 14]. To our surprise, our data suggest that the use of WhatsApp leads to a significantly higher sense of popularity than the use of Facebook. One possible interpretation might be that people spend much of their online time looking up at other people’s lives, that are often reframed and portrayed through a positive lens [2]. Such practices have been found to lead to constant or reduced self-esteem and wellbeing [8, 23].

Unsatisfying experiences with social media
We found a large part of Facebook’s unsatisfying experience to relate to content fatigue and exposure to undesirable content, while unsatisfying experiences on WhatsApp primarily stemmed from its breach of offline social norms, such as broadcasting users’ context while failing to support plausible deniability [42]. Features that increased others’ awareness of the time of one’s last logon, or whether a message has been read, while conveying a sense of presence and supporting asynchronous communications, also led to incorrect inferences about one’s context as well as the monitoring of individuals’ behaviors by others. In the same line, users’ requested more control when WhatsApp added them to group discussions without their prior approval, or when exposing them when leaving a group discussion. Interestingly, alternative instant message applications do not share such limitations as they often provide control over one’s broadcasted context [29, 18].

One should note, however, that unsatisfying experiences were overall weaker that satisfying ones, despite the strong psychological consequences they had on users, as in cases of public exposure and conflicts the tools induced. For instance, users’ self-reported overall need deprivation was low (i.e., three or lower on 5-point intensity scale) and the self-reported intensity of use was relatively high (three or higher on a 5-point likert scale). One possible interpretation for this might relate to the repeating habitual patterns of use that typically characterize users’ interactions with these two social media, and that shape an overall positive attitude towards the media [9], thus leading to the experiencing of cognitive dissonance [16] when individuals encounter unsatisfying experiences with the tool. This, if being true, might hint at a second power of habit-forming technologies [31] and may provide a better understanding of the pervasive nature social media such as Facebook.

CONCLUSION
This paper reported on a study of the experiences of 240 Facebook users and 254 WhatsApp users. With a focus on
recent, memorable events, rather than typical use which is the focus of uses & gratification studies, we were able to uncover rich and new facets in users’ experiences with Facebook and WhatsApp. Next, we found Facebook and WhatsApp to exhibit similar overall need fulfillment profiles, with relatedness, self-esteem and competence, being the three most salient needs, yet manifesting in different ways and through different social practices. Future work should further examine the interaction between social practices and need fulfillment.

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