Fearing of Missing Out (FoMO) in Mobile Social Media Environment: Conceptual Development and Measurement Scale

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Abstract
Recently, a new phenomenon termed Fear of Missing Out (FoMO) has successfully attracted our attention. FoMO is usually regarded as a concept of cognitive psychology, which reflects a kind of individual psychological state, namely the desire to know and understand what is happening externally. With the sweeping progress of mobile Internet and smart devices, FoMO has evolved from the individual manifestation to a prevalence social phenomenon. We argue that FoMO should be viewed as a multi-dimensional construct, which may refer to individual’s psychological motivation, cognitive state, and behavioral performance in a dynamic way. In this study, an operational definition will be proposed to depict the FoMO in mobile social media environment. Then, based on the literature research and interview method, we develop the measurement scale of FoMO in mobile social media context, and use the data of questionnaire survey to verify the convergent and discriminant validity of the scales.

Keywords: FoMO; Mobile Social Media; Conceptual Development; Measurement Scale; Factor Analysis


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1 Introduction
In the past decade, with the rapid development of mobile network technologies and new information and communication technologies (ICTs), the adoption of smart mobile devices has increased exponentially in China. We are gradually adapting to organize our routine lives by checking messages via IM, browsing information online, following others and posting selfies through SNS, and other real-time interactions. Particularly, in recent years the various mobile social media such as WeChat, Mobile QQ, Line, etc., have been penetrated into our daily activities, since they provide great opportunities to enable the social participation, real-time communication, and mass collaboration of netizens, which will produce a tremendous amount of user-generated content (UGC), for example, profile information, news, status updates, comments, photos, or other forms of content (Steinfield et al., 2013). According to the latest statistics, 90.7% of Chinese smart phone users have used these applications (CNNIC 2016).

Despite the benefits brought by mobile social media, the rapid process of ICT development and the extensive use of mobile social media have also resulted in a series of problems. Prior studies have shown that relying too heavily on ICT devices and mobile social media could negatively affect works and studies (Kirschner & Karpinski, 2015), daily lives (Karaioskos et al., 2010) and psychological outcomes, such as well-being (Alabi, 2013). These concerns about the consequences of physical, cognitive, and psychological problems related to the deep use of social media have aroused great concern from the public. Recently, a new phenomenon termed Fear of Missing Out (FoMO) has successfully attracted our attention. As defined by Przybylski et al. (2013, p. 1841), FoMO refers to “a pervasive apprehension that others might be having rewarding experiences from which one is absent, and is characterized by the desire to stay continually connected with what others are doing”. Przybylski et al. (2013) also develop a self-report assessment that
measured the FoMO construct. Subsequently, some researchers adopted or adapted this measurement scale in the later studies (Alt, 2015; Elhai et al., 2016; Lai et al., 2016).

Abel et al. (2016) indicate that when individuals have a sense of FoMO, they may experience feelings of irritability, anxiety, and inadequacy. We argue that although there are some prior studies on Internet addiction and social network addiction (Alabi, 2013; Andreassen et al., 2012; Beard & Wolf, 2001), FoMO should not be simply and directly linked to the psychological disorder highlighted by the measurement scale of Internet or social network addiction. In particular, FoMO may have multiple dimensions and reflections, and to some different extents. For instance, the entry level of FoMO is much more like a subconscious habit rather than a cognitive obsession or psychological disorder. Hence, the previous scale on Internet or social network addiction cannot be directly transplanted to the measuring of FoMO. On the other hand, previous research on FoMO has been mainly focused on social media in general without an emphasis on the mobile context (Abel 2016; Przybylski et al. 2013). We believe that the characteristics, such as enhanced convenience, ubiquitous accessibility, and fragmentation time brought by mobile social media will largely intensify the possibility of FoMO. Furthermore, the existing studies on FoMO were mainly conducted in western countries, and it is obvious that China and western countries have different culture backgrounds, and the culture-oriented diversity needs extra examination in measuring FoMO. Therefore, the objective of this study, which attempts to fill these research gaps, is twofold. First, based on the previous studies, an operational definition will be proposed to depict the FoMO in mobile social media environment. Second, based on the literature research and interview method, we develop the measurement scale of FoMO in mobile social media context, and use the data of questionnaire survey to verify the convergent and discriminant validity of the scales.

2 Conceptual Development

Fearing of missing out (FoMO) was first mentioned on the Huffington Post as an observed phenomenon. Later, some preliminary research has endeavored to explore the prevalence of FoMO and its relation to social media (JWT, 2011). JWT intelligence (2011) defined FoMO as “the uneasy and sometimes all-consuming feeling that you’re missing out – that your peers are doing, in the know about, or in possession of more or something better than you”. It is reported that 29% of the younger generation will continue to check their smartphones, and 20% among them will check their E-mail, text messages and social media status updates every 10 minutes (Sidhaarthaa, 2012). The first academic paper on FoMO was presented by Przybylski et al. in 2013. They conducted three studies to measure FoMO, evaluating FoMO as a mediating factor linking individual differences and social media engagement, and examine its emotional and behavioral correlates, respectively (Przybylski et al., 2013). Their definition of FoMO was widely adopted by the other scholars. Hato (2013) argued that although the definitions of FoMO differ somewhat, they have achieved some consensus that people who experience a sense of FoMO may report various negative feelings when lacking the ubiquitous contact to others and what they are doing.

Traditionally, FoMO is usually regarded as a concept of cognitive psychology, which reflects a kind of individual psychological state, namely the desire to know and understand what is happening externally. Thus, self-determination theory is a good theoretical basis to examine the relationship between intrinsic motivation (e.g., autonomy, competence, and relatedness) and the level of FoMO (Abel et al., 2016; Alt, 2015; Przybylski et al., 2013). The prior studies placed great emphases on the interpretation of personality, temperament and character, while neglecting some of the external driving factors such as technology innovation, network effect, group norm, facilitation of environment, etc. We argue that a sociomateriality view should be adopted to revisit the conceptualization of FoMO. Sociomateriality assumes that actors and artifacts are not self-contained, but they enact each other in practice (Orlikowski, 2007). In our case, people, technological artifacts (e.g., smartphones and mobile devices), and scenarios should be equally valued when understanding the FoMO phenomenon. Besides individuals’ personal traits and characteristics, the
advancement of technology and the facilitation of the specific scenario may to some extent, affect the level of FoMO. For example, people may perceive varying degrees of FoMO when they adopt the same smart device but with different quantity of loaded APPs. Also, people may reflect varying degrees of FoMO when they are situated in different contexts. In this regard, users’ FoMO in mobile social media have shown the dependence on devices (e.g., smartphone), platforms, applications, and settings. Thus, it is important to note that, FoMO should be viewed as a multi-dimensional construct in mobile social media environment, which may refer to individual’s psychological motivation, cognitive state, and behavioral performance in a dynamic way. Hence, we define FoMO in mobile social media environment as a prevalence social phenomenon that people use or check mobile ICT devices and embedded APPs frequently, as they desire to get diverse values and experience continually. When such needs and emotions cannot be satisfied, they will reflect some negative feelings such as uncomfortable, inadequacy, bewilderment, irritability, anxiety, depressing, etc.

3 Research Design

3.1 Research Method

In this paper, we used literature research and interview method to develop the initial FoMO measurement scale in mobile social media environment. Firstly, we carefully sorted out the research results about FoMO to provide ideas and theoretical support for the construction of our scale, and we tried to guide users to express their true feelings of using mobile social media through semi-structured interviews. Then we summed up the items of FoMO in mobile social media environment in a common pool and built a conceptual framework. Finally, the dimensions and related items of the conceptual framework were modified by the expert interview, and thus we put forward the preliminary measurement scale.

Since there are few theoretical foundations that can support the conceptual development work of FoMO in mobile social media environment, we need to carry out Exploratory Factor Analysis (EFA) and Confirmative Factor Analysis (CFA) to revise the scale. This study conducted a pretest questionnaire and a formal questionnaire survey on mobile social media users. The reliability test and validity test of the data from the pretest questionnaire were taken. Half of the data from the formal questionnaire was used for Exploratory Factor Analysis, and the other half was used for Confirmative Factor Analysis (Anderson & Gerbind, 1998). In this study, we used SPSS software to carry out Exploratory Factor Analysis, selecting the principal component analysis method and using the maximum variance method to do factor rotation. Furthermore, we employed AMOS to carry out Confirmative Factor Analysis, selecting the maximum likelihood estimation to implement model operation. After combining the results of EFA and CFA, we finalized the adjustment of scale structure and index deletion.

3.2 Participants and Data Collection

In this study, we did not limit the mobile social media to any certain products or brands, but with a wide range of all related selections. In the pretest questionnaire survey, we did not set requirements for the participants. In the formal questionnaire survey, participants are young people aged 18-35 years distributed all over China, and most of them have received high education and have the experience of using mobile social media. These people show a good understanding on our items, and have a pretty acceptable involvement with mobile social media, which is in line with our survey requirements. Our survey questionnaire was released on the web site of sjjump\(^1\), which is the largest online questionnaire platform in China. The online survey took about one month in August, 2016.

\(^1\) http://www.sjjump.com/
4 Preliminary Measurement Scale
Through literature research, user interviews and expert interviews, we obtained a preliminary measurement scale of FoMO degree in mobile social media environment. The preliminary scale consists of four dimensions and 18 indicators, and the four dimensions are the Psychological Motivation, Cognitive Motivation, Behavior Performance and Emotional Change. The dimension of Psychological Motivation includes four indicators, namely psychological adventure, psychological comparisons (Przybylski et al., 2013; Reagle, 2015), psychological compulsion (Liu, 2013) and be concerned about (Ma, 2012). The dimension of Cognitive Motivation includes seven indicators, namely escape from reality (Beard & Wolf, 2001), salience (Young, 1998), technology identification (Li, 2016), social needs (Zizi & Alan, 2000), entertainment needs (Liu, 2013), information acquisition (Zizi & Alan, 2000) and community attachment (Pai & Arnott, 2013). The dimension of Behavior Performance includes four indicators, namely habitual check (Liu, 2013), killing time (Zizi & Alan, 2000), time management (Beard & Wolf, 2001) and tolerance (Andreassen et al., 2012). The dimension of Emotional Change includes three indicators, namely sense of fullness (Wu & Tian, 2014), abstinence reaction (Bianchi & Phillips, 2005) and improving mood (Andreassen et al., 2012). The description of each indicator and the corresponding item can be referred to the Appendix.

5 References


## 6 Appendix

<table>
<thead>
<tr>
<th>Dimension</th>
<th>Indicator</th>
<th>Description</th>
<th>Item</th>
</tr>
</thead>
<tbody>
<tr>
<td>Psychological</td>
<td>Psychological Adventure</td>
<td>Use mobile social media to learn about new and unknown things.</td>
<td>I want to learn about all kinds of new things happening in the society through mobile social media.</td>
</tr>
<tr>
<td>Motivation</td>
<td>Psychological Comparisons</td>
<td>Use mobile social media to continue to focus on the dynamics of their friends and make comparisons with their own.</td>
<td>I get worried when I find out my friends are having fun without me in the mobile social media.</td>
</tr>
<tr>
<td></td>
<td>Psychological Compulsion</td>
<td>Compulsive attention to certain information on mobile social media.</td>
<td>In the mobile social media, when it has new information, I want to check it immediately.</td>
</tr>
<tr>
<td></td>
<td>Be Concerned About</td>
<td>Self expression through mobile social media to get the attention of friends continually.</td>
<td>I always look forward to someone sending me messages or &quot;@&quot; me on the mobile social media.</td>
</tr>
<tr>
<td>Cognitive</td>
<td>Escape from Reality</td>
<td>Use mobile social media to escape from reality.</td>
<td>I often use mobile social media as a way to avoid stress of learning or working.</td>
</tr>
<tr>
<td>Motivation</td>
<td>Salience</td>
<td>The importance of using mobile social media for individuals.</td>
<td>Using mobile social media is a thing that can't be separated from daily life.</td>
</tr>
<tr>
<td></td>
<td>Technology Identification</td>
<td>The feeling of man-machine interaction when using the mobile social media.</td>
<td>Overall, I feel comfortable with the interface design of mobile social media.</td>
</tr>
<tr>
<td></td>
<td>Social Needs</td>
<td>Use mobile social media for social activities.</td>
<td>Using mobile social media makes it easier for me to contact my family and friends.</td>
</tr>
<tr>
<td></td>
<td>Entertainment Needs</td>
<td>Use mobile social media for entertainment.</td>
<td>I often use mobile social media to browse articles, music, videos, etc.</td>
</tr>
<tr>
<td></td>
<td>Information Acquisition</td>
<td>Use mobile social media for information acquisition.</td>
<td>I can get information about the news, business or professional knowledge on mobile social media.</td>
</tr>
<tr>
<td></td>
<td>Community Attachment</td>
<td>Identify the group culture of mobile social media and integrate into it.</td>
<td>I have a lot of friends in the mobile social media who have the same interest with me, and I often participate in the discussion of interesting public topics.</td>
</tr>
<tr>
<td>Behavior</td>
<td>Habitual Check</td>
<td>Habitual check of mobile social media.</td>
<td>When I am free, I always check my mobile social media to see if there is any new update.</td>
</tr>
<tr>
<td>Performance</td>
<td>Killing Time</td>
<td>Use mobile social media to kill the boring time.</td>
<td>I often use mobile social media to kill the boring time.</td>
</tr>
<tr>
<td></td>
<td>Time Management</td>
<td>Planned schedule is often affected because of the use of mobile social media.</td>
<td>I often delay or interrupt the original schedule due to the use of mobile social media.</td>
</tr>
<tr>
<td></td>
<td>Tolerance</td>
<td>The time of using mobile social media is gradually increased.</td>
<td>I need to spend more time using mobile social media to be satisfied, compared with the previous.</td>
</tr>
<tr>
<td>Emotional</td>
<td>Sense of Fullness</td>
<td>The sense of fullness in the use of mobile social media.</td>
<td>Using mobile social media often makes my life more fulfilling.</td>
</tr>
<tr>
<td>Change</td>
<td>Abstinence Reaction</td>
<td>Negative emotional responses occurred when failing to participate in mobile social media activities.</td>
<td>I will feel frustrated when I can't use the mobile social media for a few days.</td>
</tr>
<tr>
<td></td>
<td>Improving Mood</td>
<td>The mood becomes better as the use of mobile social media.</td>
<td>When I am down, using a mobile social media will make me feel better.</td>
</tr>
</tbody>
</table>

Figure 1. Indicators description and Items