Problematic use of live video streaming services: Impact of personality traits, psychological factors, and motivations

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ABSTRACT
As technology grows, live video streaming services become a new form of social media, in which everyone is able to live webcast and interact with audiences. Statistics indicate that Internet audiences are viewing more live content than ever before. It is noteworthy live video streaming viewing may become a new form of addicted behavior of technology but literature on such subject is very limited. The purpose of this research is to explore the factors for addictive use of live video streaming services. A total of 338 participants were recruited via an online survey that was designed with five subscales: demographics, psychological factors (life satisfaction and loneliness), Big Five personality traits, motivations, and problematic use of live video streaming services. Results indicated age was not related to addiction, but gender and average watching time per day were related. The personality of agreeableness was negatively related and neuroticism was positively related with the addiction. Motivations for interaction, escapism, and peeking were found related to the addiction.

Keywords
live video streaming; social media; Internet addiction; motivations

1. INTRODUCTION
Live video streaming means the distribution of video content over the Internet to many simultaneous audiences in real time by means of streaming technology which allows users to watch the media content as it is transmitted, rather than having to wait for a complete file to be downloaded. In the technological context, live webcasting and live video streaming are considered as synonyms. [1] Although the live streaming technology has been available over decades, some apps (such as 17 and Inke) reframed it as a social form—essentially video chatrooms where strangers gather to watch and chat with a broadcaster. This new content type pushes live video streaming into the next evolution in self-expression, beyond selfies, stickers, and filters.

Live video streaming services are also looking towards new features to strengthen broadcaster-audience connections. For example, users can follow broadcasters and track their recent status. During the broadcasting, viewers can send a public question, a digital gift, or multiple digital gifts to grab the broadcaster’s attention. In return, the broadcaster can then choose to acknowledge the sender’s username and respond with a quick answer or a simple “thank you”. The popular broadcasters have become Internet celebrities (known as Wang Hong in Chinese) with millions of fans or followers and it is reportedly that China’s best known Wang Hong earn 300 million yuan a year which compares favorably to the earning of a top movie star.[2] In addition, live video streaming has been advancing quickly as social media platforms, such as Facebook and Twitter are scrambling to join the race. User-generated video on social media generates 1200% more shares than text and images combined.[3] Statistics indicate that Internet audiences are viewing more live content than ever before and the live video streaming market is estimated to grow from $30.29 billion in 2016 to more than $70 billion by 2021. [4]

In the latest version of the Diagnostic and Statistical Manual of Mental Disorders, addiction to online games was included as a tentative disorder. [5] Although social media addiction as a new disorder has not been recognized, social media has become a global phenomenon because the number of worldwide users continues to grow and is expected to reach approximately 2.95 billion people in 2020, almost a third of the Earth’s population. [6] In addition, a growing body of evidence indicates that the excessive use of social media is a growing mental health concern [7,8], and that social media platforms can cause psychological disorders, particularly among adolescent users.[9] As argued by Sherman and Smith [10], “the world has gone mobile, and so has social media engagement”.

Studies on social networking addiction have focused on Facebook, and most have used a sample composed of Western individuals. The results of these studies suggest that Facebook addiction is linked to personality [11] and motivation[12], as well as certain psychological variables such as depression [13], self-esteem, and life satisfaction.[14] The Bergen Facebook Addiction Scale, specifically developed for assessing the addictive use of Facebook [15], has been utilized by many of the aforementioned studies. Although the scale has demonstrated reliability and validity, a generic instrument capable of capturing all social networking apps, as opposed to evaluating the problematic use of one specific social networking site only (e.g., Facebook), has been called for. [16] The

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Social Media Disorder (SMD) scale was thereafter developed.[17] While the Internet continues to integrate with modern lives, the risks of negative outcomes resulting from excessive use are also increasing. [18] Live video streaming service, as a major online application and social platform nowadays, has rarely been investigated.

It is noteworthy live video streaming viewing may become a new form of addicted behavior of technology. Understanding the use of live video streaming services still requires more efforts. Following the conception of the cognitive-behavioral model of problematic Internet use (PIU), which states that psychosocial problems increase the likelihood of individuals experiencing cognitive or behavioral symptoms of generalized PIU. Besides, problematic use of Internet are associated with personality traits and motivations.[19] This study investigated how the problematic use of live video streaming services are associated with the Big Five personality traits, psychological factors (loneliness and satisfaction with life, and motivations).

The research questions for this study were:

RQ1: What is the association between psychological factors (life satisfaction and loneliness) and addictive use of live video streaming services?

RQ2: Are personality traits (openness, conscientiousness, extraversion, agreeableness, and neuroticism) related with addictive use of live video streaming services?

RQ3: To what degree do motivations (interaction, information seeking, self-presentation, escapism, and peeking) predict for addictive use of live video streaming services?

2. MATERIALS AND METHODS

2.1 Sample

A total of 338 participants recruited via live video streaming platforms completed an online survey and 100% were valid data. Of these 338 participants, 66.6% were female and 33.4% were male, and their ages ranged from 16 to 51 years (mean [M] = 21.03, standard deviation [SD] = 4.35).

**Table 1. Sample demographics**

<table>
<thead>
<tr>
<th>Demographics</th>
<th>Number</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>Gender</td>
<td>338</td>
<td>100%</td>
</tr>
<tr>
<td>Male</td>
<td>113</td>
<td>33.4%</td>
</tr>
<tr>
<td>Female</td>
<td>225</td>
<td>66.6%</td>
</tr>
<tr>
<td>Viewing time per day</td>
<td></td>
<td></td>
</tr>
<tr>
<td>less than one hour</td>
<td>338</td>
<td>100%</td>
</tr>
<tr>
<td>1-2 hours</td>
<td>270</td>
<td>81.9%</td>
</tr>
<tr>
<td>2-3 hours</td>
<td>51</td>
<td>15.1%</td>
</tr>
<tr>
<td>3-4 hours</td>
<td>13</td>
<td>3.8%</td>
</tr>
<tr>
<td>more than 4 hours</td>
<td>2</td>
<td>0.6%</td>
</tr>
<tr>
<td>The type watched mostly</td>
<td>338</td>
<td>100%</td>
</tr>
<tr>
<td>online game</td>
<td>102</td>
<td>30.3%</td>
</tr>
<tr>
<td>entertainment</td>
<td>89</td>
<td>26.3%</td>
</tr>
<tr>
<td>chatting</td>
<td>73</td>
<td>21.6%</td>
</tr>
</tbody>
</table>

2.2 Measurement

The online measurement was modified from well-established constructs in the literature to warrant item reliability and validity. It contained questions assessing demographics, psychological factors, the Big Five personality traits, motivations, and problematic use of live video streaming services (Appendix 1). Five-point Likert scales were used throughout (1 = strongly disagree and 5 = strongly agree); a higher score was considered to indicate a higher strength for the factor.

3. RESULT

A hierarchical regression analysis was conducted to examine the relationship between psychological factors, the Big Five personality traits, motivations, and addictive use of live video streaming services (Table 1). Gender, age, and average viewing time per day were entered in Block 1, explaining 11.7% of the variance for the addictive use of live video streaming services ($F_{12, 322} = 17.52, p < .001$). After demographics were controlled for, psychological factors, the Big Five personality traits, and motivations, entered in Block 2, explained 37.3% of the variance for the addictive use of live video streaming services ($F_{12, 322} = 17.52, p < .001$).

The first research question asked if psychological factors of life satisfaction and loneliness was associated with addictive use of live video streaming services. No significant relationship was found, and this results differed from some previous studies that argued psychological factors were significant reasons for addiction to the Internet.

The second research question explored the relationship between the Big Five personality traits and addictive use of live video streaming services. Result indicated agreeableness was negatively related with addictive use of live video streaming services ($b = -.142, p < .01$), while neuroticism was positively related with addictive use of live video streaming ($b = .121, p < .01$). For the rest personality traits like openness, conscientiousness, and extraversion, no significant relationship was found.

The third research question concerned the predictive power of motivations for addictive use of live video streaming services. The motivation for escaping the reality ($b = .251, p < .001$) contributed the most for addictive use of live video streaming services, followed by the motivation for peeking ($b = .133, p < .001$), and interacting with others ($b = .099, p < .05$). No significant predictive power was demonstrated by the motivation of information seeking, and self-presentation.

**Table 2. Regression table for addictive use of live streaming services**

<table>
<thead>
<tr>
<th>Variables</th>
<th>b</th>
<th>SE b</th>
<th>$\beta$</th>
</tr>
</thead>
<tbody>
<tr>
<td>Gender</td>
<td>-.268*</td>
<td>.084</td>
<td>-.173</td>
</tr>
<tr>
<td>Age</td>
<td>.007</td>
<td>.009</td>
<td>.043</td>
</tr>
<tr>
<td>Viewing time per day</td>
<td>.293***</td>
<td>.063</td>
<td>.247</td>
</tr>
</tbody>
</table>
also proved the association. For example, persons with neurotic
associated with the addiction to live video streaming services.
passive motivations like interaction, escapism, and peeking are
information seeking or self-presentation are not related, while the
agreable personality. The instrumental motivations like
excessively, while the reverse result is indicated with people with
personality is inclined to use live video streaming services
is linked to personality [20] and motivations [21], the current study
Consistent with the studies suggesting that social media addiction
be addicted. Different from many studies that suggested
results of this study indicated life satisfaction and loneliness is not
psychological disorder contributed to addictive use of the Internet,
relationship between addictive use of social media, narcissism, and self-esteem: Findings from a large national survey. Addictive Behaviors, 64, 287-293.
Further investigation of other psychological dysfunctions, such as
depression, and self-esteem, is needed.

According to regression analysis, age is not associated with the
addiction to live video streaming services but gender and average
watching time per day are related. Male tend to get addicted and
people spending more time on live video streaming in inclined to
be addicted. Different from many studies that suggested psychological disorder contributed to addictive use of the Internet, results of this study indicated life satisfaction and loneliness is not associated with addictive use of live video streaming services. Further investigation of other psychological dysfunctions, such as depression, and self-esteem, is needed.

Consistent with the studies suggesting that social media addiction is
linked to personality [20] and motivations [21], the current study also proved the association. For example, persons with neurotic personality is inclined to use live video streaming services excessively, while the reverse result is indicated with people with agreeable personality. The instrumental motivations like information seeking or self-presentation are not related, while the passive motivations like interaction, escapism, and peeking are associated with the addiction to live video streaming services.

The current study promotes understanding regarding the excessive use of this new application. However, this study has a limitation of generalizability due to the use of an online convenience sample.

5. REFERENCES


4. CONCLUSION

Live video streaming platforms have become increasingly popular and developed into a form of social media. On such platforms, streamers broadcast real-time video and viewers on a streamer’s channel can comment on their performance or simply interact with other viewers via instant chat. Addiction to social media, such as Facebook, is a popular research topic lately but excessive use of live video streaming services has rarely been examined.

According to regression analysis, age is not associated with the addiction to live video streaming services but gender and average viewing time per day are related. Male tend to get addicted and people spending more time on live video streaming in inclined to be addicted. Different from many studies that suggested psychological disorder contributed to addictive use of the Internet, results of this study indicated life satisfaction and loneliness is not associated with addictive use of live video streaming services. Further investigation of other psychological dysfunctions, such as depression, and self-esteem, is needed.

Consistent with the studies suggesting that social media addiction is linked to personality [20] and motivations [21], the current study also proved the association. For example, persons with neurotic personality is inclined to use live video streaming services excessively, while the reverse result is indicated with people with agreeable personality. The instrumental motivations like information seeking or self-presentation are not related, while the passive motivations like interaction, escapism, and peeking are associated with the addiction to live video streaming services.

<table>
<thead>
<tr>
<th>Step 2</th>
<th>R²</th>
<th>R² Change</th>
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<tbody>
<tr>
<td>Gender</td>
<td>-0.206**</td>
<td>0.069</td>
</tr>
<tr>
<td>Age</td>
<td>-0.007</td>
<td>0.008</td>
</tr>
<tr>
<td>Viewing time per day</td>
<td>0.19***</td>
<td>0.051</td>
</tr>
<tr>
<td>Life satisfaction</td>
<td>-0.002</td>
<td>0.046</td>
</tr>
<tr>
<td>Loneliness</td>
<td>0.084</td>
<td>0.048</td>
</tr>
<tr>
<td>Openness</td>
<td>-0.026</td>
<td>0.052</td>
</tr>
<tr>
<td>Conscientiousness</td>
<td>0.015</td>
<td>0.082</td>
</tr>
<tr>
<td>Extraversion</td>
<td>0.036</td>
<td>0.059</td>
</tr>
<tr>
<td>Agreeableness</td>
<td>-0.142**</td>
<td>0.069</td>
</tr>
<tr>
<td>Neuroticism</td>
<td>0.121**</td>
<td>0.043</td>
</tr>
<tr>
<td>Interaction</td>
<td>0.099*</td>
<td>0.041</td>
</tr>
<tr>
<td>Information seeking</td>
<td>-0.044</td>
<td>0.039</td>
</tr>
<tr>
<td>Self-presentation</td>
<td>0.022</td>
<td>0.043</td>
</tr>
<tr>
<td>Escapism</td>
<td>0.251***</td>
<td>0.049</td>
</tr>
<tr>
<td>Peeking</td>
<td>0.133***</td>
<td>0.035</td>
</tr>
<tr>
<td>R²</td>
<td>0.466</td>
<td>0.411</td>
</tr>
</tbody>
</table>

p < 0.05; **p < 0.01; ***p < 0.001
6. Appendix

Appendix 2. Measurement

1. Psychological Factors

1.1 Life satisfaction
The conditions of my life are excellent.  
In most ways my life is close to my ideal.  
So far I have gotten the important things I want in life.  
If I could live my life over, I would change almost nothing.

1.2 Loneliness
I always feel that I lack companionship.  
I always feel left out in the group.  
I always feel isolated from others.  
I always feel no one really knows me well.

2. The Big Five personality traits

2.1 Openness
I am emotionally stable, not easily upset.  
I am very assertive.  
I always stay optimistic after experiencing a setback

2.2 Conscientiousness
I always get things done.  
I am very reliable.  
I am very responsible.  
I am very systematic to keep things in order.  
I always find clever ways to do things

2.3 Extraversion
I am very outgoing.  
I always like to take charge.

2.4 Agreeableness
I am always courteous to others.  
I always feel sympathy for others.  
I always feel anxiety or afraid.

2.5 Neuroticism
I always have up and down mood swings.  
I always feel suspicious of others’ intentions.  
I always feel anxious or afraid.

3. Motivations for use live video streaming services

3.1 Interaction
The usage is for interacting with people.  
The usage is for communicating with others.  
The usage is for maintaining relationship with group members  
The usage is for making friends with people

3.2 Information seeking
The usage is for understanding more knowledge.  
The usage is for learning updated information.

3.3 Self-presentation
The usage is for showing myself off.  
The usage is for sharing my life.  
The usage is for letting people know me.

3.4 Escapism
The usage is for forgetting about troubles.  
The usage is for escaping from reality.  
The usage is for avoiding bad feelings.  
The usage is for getting relaxed without efforts.

3.5 Peeking
The usage is for peeking lives of the broadcaster or other members.  
The usage is for peeking personal information of the broadcaster or other members.

4. Problematic use of live video streaming services

I often lose sleep because I spend too much time on watching live video streaming.  
I often skip meals or delay my eating because I am busy watching live video streaming.  
I have had conflicts with my partner or parents because too much time I spend on watching live video streaming.  
I have lost contact with some friends because I rather spend time on watching live video streaming.  
My school/job performance has suffered because of the time I spend on watching live video streaming.

I always come up with new ideas

6. Appendix

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I always like to take charge.
## Authors’ background

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