Drivers of online social media addiction in the context of public unrest: A sense of virtual community perspective

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Abstract

During periods of public unrest, people tend to increase their daily usage of social media sites, such as Facebook, Instagram, or WhatsApp, to keep themselves abreast of developments and share their opinions. Over the last trimester of 2019, there were many demonstrations of public unrest in Latin-American countries, including Ecuador, Chile, and Bolivia. These events boosted the social media use. Individuals are exposed to information that is more sensitive and engaging than what is encountered in less agitated times. For instance, images of clashes between demonstrators and police, graphic violence, fake news, and accusations become more plentiful. The increased online interaction and the engaging nature of information during extended periods of public unrest may encourage the development of social media addiction. This study explores the sense of virtual community theory and uses self-assertion as moderator to capture the drivers of online social media addiction in the context of public unrest. Results reveal that immersion has a significant association with addiction, and self-assertion moderates the relationship between influence and membership.

Keywords: Social media; Self-assertion; Social media addiction; Sense of virtual community; Public unrest

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1. Introduction

The use of social media has become global and widespread. It is estimated that in 2020, 3.08 billion people of all walks of life adopted at least one social media technology, such as Facebook, WhatsApp, or Instagram (Statista, 2020). While such technologies can significantly benefit users, they are not free of "dark sides", including excessive use, also known as addiction to social media use (Steenackers, Cassady, Brengman, & Willems, 2016). Addiction is defined as a maladaptive state of dependency on the use of social media that may include different symptoms. Those symptoms may include negative emotions, conflict, mood modification, etc. (Turel, Serenko, & Giles, 2011). Herein we argue that those symptoms can be exacerbated during extended periods of civil unrest. During such periods, the frequency of use of social media usually increases and the content conveyed becomes highly engaging. This can generate negative implications not only for the individuals, but also for the whole society (Seo & Ray, 2019).

Such extended use coupled with engaging content, and the individual perception of belonging and affective ties to a social group, can sensitize people's reward systems to social media cues. In turn, this underlies the development of social media addiction (Wegmann, Müller, Turel, & Brand, 2020). Nevertheless, existing literature has paid little attention to the combination of the aspects described above as potential drivers of social media addiction. To examine these assertions, we develop a theoretical model and test it in the context of a long-duration public unrest event in a Latin-American country. The public unrest in that country generated chaos on the streets (BBC News, 2019) and increased the frequency of social media use. Specifically, the research model builds on the theory of sense of virtual community (SOVC) (Koh & Kim, 2003), and extends it by using self-assertion as moderator. Ultimately our theory explains important, yet overlooked, drivers of addiction to social media use in a unique context.

This article makes three key contributions to the emerging theoretical body of knowledge on addiction to social media use, a field of research that is still in its infancy (Kuss & Griffiths, 2012; Throuvala, Griffiths, Rennoldson, & Kuss, 2019). First, we provide a unique theoretical account of addiction to social media use. Second, we examine the SOVC theory and its dimensions as potential drivers of the emergence of both adaptive and maladaptive states in users. Third, most existing studies on "dark sides" of social media have collected data from samples in a "normal daily life" context, and mostly in Europe, Asia, or North America (Seo & Ray, 2019; van den Eijnden, Lemmens, & Valkenburg, 2016). We extend the literature by collecting data in South America that refer to a prolonged period of public unrest. As such, comparing our findings to those of prior research can shed light on how the South American context under civil unrest conditions might differ.

2. Theoretical background

2.1. Addiction to social media use

The use of certain Internet applications can be rewarding and, therefore, reinforce automatic repetition of the use behavior. However, the rewarding feeling may overlook potential harm arising from such use in the long run (Meshi, Elizarova, Bender, & Verdejo-Garcia, 2019). This has led

researchers to conceptualize the maladaptive use of social media sites as a form of behavioral disorder. The symptoms resemble those of behavioral addictions, including tolerance, withdrawal, salience, relapse, mood modification, and conflict with other life activities (Turel & Serenko, 2012). The importance of this phenomenon has propelled research on how to measure it, and on antecedents and outcomes of addiction to social media use (Bányai et al., 2017; Hawk, van den Eijnden, van Lissa, & ter Bogt, 2019; Kircaburun, Demetrovics, & Tosuntaş, 2019; Shensa et al., 2017). It is important to study this phenomenon given its sometimes adverse outcomes (Griffiths, Kuss, & Demetrovics, 2014), and our civic duty as information systems (IS) researchers to prevent its spread.

Previous literature has employed diverse terms to describe addiction to social media use: pathological Internet use (Davis, 2001), Internet addiction (Beard & Wolf, 2001), and problematic use of the Internet (Caplan, 2002). In this study we use the term addiction to describe the abovementioned maladaptive dependency on social media use. This term is consistent with terminology used in IS research, while not dismissing the appropriateness of other terms (Osatuyi & Turel, 2018; Serenko & Turel, 2015; Turel, 2015; Turel et al., 2011). The literature offers several research models and scales that assess this addiction and serve as a basis for testing its antecedents and outcomes (Cecilie S. Andreassen, 2015; Cecilie S. Andreassen & Pallesen, 2014; Pontes, Andreassen, & Griffiths, 2016).

For instance, In the context of online game playing, Charlton & Danforth (2007) distinguish between addiction and high engagement, and show that addiction manifests in criteria such as cognitive salience, euphoria, and tolerance. Gong, Zhang, Chen, Cheung, & Lee, (2019) studied the antecedents and consequences of excessive online gaming using a research model based on the social learning theory of aggression (Bandura, 1978). Turel (2021) studied the association between videogames and guns in adolescents. Previous studies agree that excessive online gaming may have adverse consequences such as technology-person conflict, technology-family conflict, and technology-work conflict. Such research models, though, as applied to the study of online gaming may not be applicable with the same efficacy to the study of addiction to social media use. User interaction with social media usually implies high levels of social computer-mediated interactions that includes close friends, family members, and work colleagues. This characteristic makes social media distinct from other technologies. Behaviors like posting personal photos, making comments, reacting to comments of others, etc., are very specific to this technology (even videogames are limited). Therefore, we should use tailored research models that focus specifically on social aspects for its assessment.

Previous studies that assess addiction to social media use are still relatively scarce. A few authors have applied the theory of uses and gratification (Katz, Blumler, & Gurevitch, 1973) to study the continuous intention to use (Hossain, Kim, & Jahan, 2019; Phua, Jin, & Kim, 2017). In a systematic review of technology use addiction research, Ryan, Chester, Reece, & Xenos (2014) found that Facebook use may be excessive or habitual. Ryan et al. (2014, p. 133) observe that "*examination of Facebook addiction measures highlights inconsistency in the field*". A similar view on the distinction between habit and addiction is expressed by Serenko & Turel (2015) and Turel & Serenko (2012). Lastly, van den Eijnden et al. (2016) developed a social media disorder scale that evaluates the problematic usage based on nine criteria: preoccupation, tolerance, withdrawal, persistence, displacement, problem, deception, escape, and conflict.

Similar studies that examined the phenomenon of addiction to social media use in different countries around the world have employed a variety of research models. The variance explained by those models differs considerably from one country and model to another, as seen in Table 1. Asian countries are the ones that, on average, have a higher amount of variance explained, but this can also be an artefact of the models and number of predictors used in these countries.

Table 1. Previous literature on addiction to social media use

Source	Sample size	Variance explained (SMC)	Social Media	Country
Pontes et al. (2016)	509	0.10	Facebook	Portugal
Turel (2015)	284	0.11	Facebook	USA
Kircaburun et al. (2019)	827	0.18	Social media	Turkey
Turel & Serenko (2012)	194	0.25	Social network websites (SNW)	USA
Osatuyi & Turel (2018)	161	0.41	Facebook	USA
Savci, Ercengiz, & Aysan (2018)	533	0.48	Social media	Turkey
C. Wang et al. (2015)	470	0.60	Microblogging	China
C. Liu & Ma (2018)	619	0.64	Social media	China
Balakrishnan & Shamim (2013)	707	0.68	Facebook	Malaysia
Seo & Ray (2019)	420	0.69	Twitter	USA

Note: SMC = squared multiple correlation

It is noteworthy that most models that explore and assess social media addiction overlook the role of SOVC dimensions (immersion, influence, and membership). However, the social aspects are key factors that make social media an addictive application (Cecilie S. Andreassen, 2015; Kuss & Griffiths, 2012). Moreover, most studies have focused on normal daily life contexts; whereas more contentious contexts can serve as a fertile ground for the intensive delivery of highly engaging social media content (Bavel et al., 2020). Our study makes strides toward filling these gaps, as it develops a model centered on the social aspects, and examines them in the context of public unrest events (more detail in Section 3.1).

2.2. Hypothesis development

Sense of community theory (Koh & Kim, 2003; McMillan & Chavis, 1986) suggests that an individual's affective ties toward a given community can be based on shared media. This results in perception of belonging, emotional safety, and increased investment in the community. This perception may already be present in the individuals before the adoption of social media. It is likely that Facebook friends are already known to the user in the offline context.

Importantly, the communication medium can be mediated by Information and Communication Technologies (ICT), and the sense of virtual community (SOVC) often forms among members of online platforms (Koh & Kim, 2003). A positive perception of SOVC has been associated with an active participation in online communities (Naranjo-Zolotov, Oliveira, & Casteleyn, 2019). For instance, Cheng, Tsai, Cheng, & Chen (2012) found that SOVC is positively associated with the purchasing intention in online shopping communities. Literature also reports evidence that individuals who are involved in civic engagement activities also present high levels of SOVC (Peterson, Speer, & McMillan, 2008; Talò, Mannarini, & Rochira, 2014). For example, in the context of public e-participation in the decision-making process, Naranjo-Zolotov, Oliveira, Casteleyn, &

Irani (2019) found that high levels of SOVC are associated with higher levels of system usage. SOVC is defined in its three dimensions: immersion, influence, and membership. These dimensions reflect the cognitive, behavioral, and affective aspects of the community members, respectively. We join into a single research model the SOVC theory and the self-assertion as moderator between the SOVC dimensions and the addiction to social media use. Figure 1 shows the proposed model. This integration is important as it can shed new light on why some people develop stronger addiction than others by using a social lens. Hence, considering both their sense of community and how its influence differs based on the self-assertion levels of users.

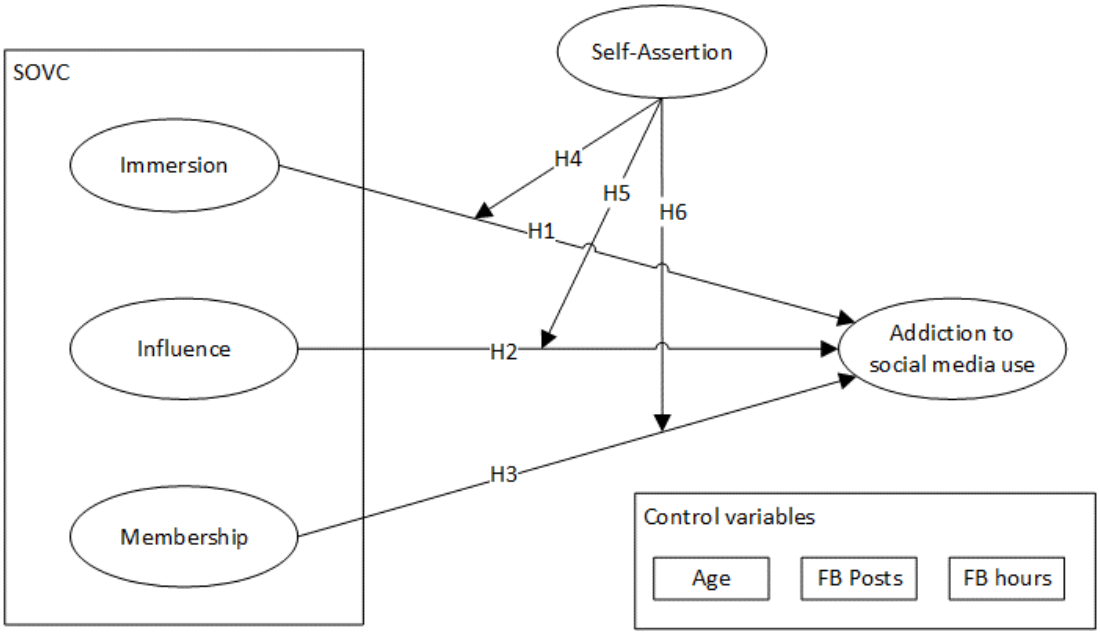

Figure 1. Online social media addiction research model.

Immersion is defined as the degree of flow (Csikszentmihalyi, 2000; Koh & Kim, 2003) that the individual experiences when using an information technology. The flow is a mental state in which the individual experiences full involvement and enjoyment when performing some activity. Especially in the context of public unrest events, the users may become highly engaged with the social media by scrolling down through sensitive information or interacting through comments and posts.

Sensitive and engaging content on social media (for instance, videos of the protests, political opinions, or even fake news) may increase the frequency of use, and therefore, also change the engagement of individuals (Maier, Laumer, Eckhardt, & Weitzel, 2015). This is manifested as increased levels of user immersion (Q. Liu, Shao, & Fan, 2018). Immersion can underlie the formation of addiction, because it affords repeated rewards (e.g., when receiving new information that reinforces one's views) in a physically and emotionally safe environment (McMillan & Chavis, 1986). Moreover, it makes it possible to avoid missing out on what one may perceive as crucial information (J. Wang et al., 2019). Such repeated rewards and avoidance of missing out on important information can sensitize a person's reward system. Ultimately, lead to compulsive

checking of messages and overlooking potential harms (e.g., checking a message about an event, while driving). Hence, it can drive addiction to social media sites (He, Turel, & Bechara, 2017; He, Turel, Brevers, & Bechara, 2017). As such, we expect that the greater the immersion, the more likely a person is to develop addiction to social media use, in the sense that his or her use will be more impulsive and ignore the damages that such use can cause. Consequently:

Hypothesis 1: Immersion is positively associated with addiction to social media use.

Influence refers to the perception that an individual can sway the decisions or opinions of other members of the online community (Koh & Kim, 2003). This dimension is known as a behavioral aspect of the SOVC. It represents a mutual interaction between the members' openness to be influenced by other members, and the power of an individual member to influence her/his social media community (McMillan & Chavis, 1986). As individuals join social media communities and become active members, the perceived power of influence and the openness to be influenced by other members will contribute to the development of the active use.

During events of public unrest on the streets, confrontations fueled by opposing political views and fake news etc. will also occur among members of social media communities. Users will also adopt a position regarding the unrest events and may have either a stronger desire to influence others to adopt the same position and views, or a need to have their own views validated. Consequently, influence may lead to greater interaction on social media and be a critical driver of impulsive and problematic usage behavior in the context of public unrest. Moreover, previous literature reports evidence that individuals are more receptive to the influence of other individuals when they share similar interests (Kang, Shin, & Gong, 2016; Turel & Osatuyi, 2017). Therefore, we hypothesize:

Hypothesis 2: Influence is positively associated with addiction to social media use.

Membership is the affective dimension of SOVC and refers to the extent to which the individual feels that she/he belongs to a given community (McMillan & Chavis, 1986). In our case the virtual community to which the individual belongs exists in/on the social media site. Unlike other online services such as online gaming or online shopping (Cheng et al., 2012), most of the members of the online social network site also know each other in offline life. This may increase the sense of belonging. When members of an online social media community show higher levels of sense of belonging, they often increase their member loyalty to the virtual community (Lin, 2008) and their engagement with the online site (Hsu & Liao, 2014).

McMillan & Chavis (1986) highlight the importance of personal investment as a driver of the feeling of membership. Hence, when the individuals have the perception that they have worked to earn membership, their perception of the right to belong will be stronger and more meaningful (Hsu & Liao, 2014). In the context of public unrest events, users of the social media community become more active as they are emotionally motivated to earn or to consolidate their membership, potentially leading to compulsive or excessive usage behaviors. Therefore, we hypothesize:

Hypothesis 3: Membership is positively associated with addiction to social media use.

Self-assertion is defined as the individual's feeling or desire to express himself or herself to others (Alberti & Emmons, 1978; Jin, 2015; Wolpe, 1968). Derlega, Metts, Petronio, & Margulis (1993) state that self-assertion is also related to the degree of intimacy, commitment, and response to others with whom we have ties. Thus, self-assertion is considered to be a key construct for an individual who wants to maintain the relationships with others in the social network. In the case of online self-assertion, the users can express themselves by posting messages, responding to comments, posting pictures or videos, etc. During events of public unrest users may feel a stronger desire for expression about the topics that are attracting the public attention. Therefore, the frequency of active and passive use of social media may also increase (Verduyn et al., 2015). We believe that the feeling of immersion, influence, and membership that are present in social media users can be intensified by the desire of expressing to others. Consequently, we hypothesize:

Hypothesis 4: Self-assertion moderates the effects of immersion on addiction to social media use such that the effects are stronger among users with higher self-assertion levels.

Hypothesis 5: Self-assertion moderates the effects of influence on addiction to social media use such that the effects are stronger among users with higher self-assertion levels.

Hypothesis 6: Self-assertion moderates the effects of membership on addiction to social media use such that the effects are stronger among users with higher self-assertion levels.

3. Method

3.1. Context of study

During the final months of 2019 several Latin-American countries witnessed a social explosion that led to public unrest expressed in violent protests and demonstrations on the streets (BBC News, 2019; *The Guardian News*, 2019). These demonstrations lasted for several weeks, affecting the regularity of public transportation, disrupting local business, and forcing the closure of schools during the protests, among other consequences. During this period, the social media were flooded with sensitive information including hate speech messages, political opinions, fake news (Bronstein, Pennycook, Bear, Rand, & Cannon, 2019), posts of graphic violence, etc. Users were thus exposed to an unusual overdose of highly charged information that may have provoked a change in their usage behavior. Resulting in negative consequences associated with the addiction to social media use over time.

3.2. Measurement scales and data collection

Control and descriptive variables were measured using common items. Age was self-reported with an open-ended numerical response question (in years). Level of education was self-reported using four categories: basic, secondary, tertiary, and master or PhD level. We captured two aspects of Facebook use through self-reports on open-ended numerical response questions: (i) the number of hours per day spent on Facebook, and (ii) the number of posts on Facebook per day. For the model's constructs, we used previously validated scales and adapted them to the context of social media.

All constructs were reflective (Finn & Wang, 2014) and used seven-point Likert-type scales ranging from 1 (totally disagree) to 7 (totally agree). The questions were translated from English to Spanish. The validity of translation was established with a forward-backward translation procedure. Table 2 outlines the measurement instrument.

Table 2. Survey instrument

Construct	Questions	Adapted from
Time per day (FB hours)	During the recent events of public unrest, how much time, on average, did you spend on online social media (in hours)?	Turel & Serenko (2012)
Posts per day (FB posts)	During the recent events of public unrest, how many comments, photos, or videos did you post, on average, per day?	
Sense of virtual Community	**Membership**	Koh & Kim (2003)
	I feel as if I belong to my social media community.	
	I feel as if my social media community members are my close friends.	
	I like my social media community members.	
	Influence	
	I am well known as a member of my social media community.	
	I feel that I control my social media community.	
	Other members often view my activities on social media.	
	Immersion	
	I spend much time online with my social media community.	
	I spend more time than I expected to interact with my social media community.	
	I feel as if I am addicted to my social media community.	
Self-Assertion	I often suggest or give my opinion about social issues on social media.	(Jin, 2015)
	I share my knowledge and experience with others using social media.	
	I like to express my opinion about important issues through social media.	
Addiction (Social Media disorder)	My social life has suffered because of my interaction on social media.	(Charlton & Danforth, 2007)
	Using social media interfered with other activities.	
	When I did not use social media, I often felt agitated.	
	I have made unsuccessful attempts to reduce the time I interact with social media.	

We collected data in a Latin-American country using an electronic questionnaire. A hyperlink to the electronic questionnaire was sent in two ways: (1) to a database list of university students, and (2) through the online social networks such as Facebook and WhatsApp groups using the snowball sampling technique (Baltar & Brunet, 2012). Participation in the electronic survey was voluntary. The hyperlink could be used only once. An explanatory text in the introduction of the questionnaire made a reference to the purpose of the study and context of the public unrest during the protests. Finally, 237 valid responses were obtained. Table 3 shows the demographics of the sample collected.

Table 3. Sample demographics

Demographics (N = 237)		Total	%
Age (years)			
	Less than 25	111	0.468
	From 26 to 40	82	0.346
	More than 40	44	0.186
Gender			
	Male	162	0.684
	Female	75	0.316
Education			
	Basic	0	0.000
	Secondary	29	0.122
	Tertiary	155	0.654
	Master or PhD	53	0.224

4. Results

We assessed the research model using structural equation modeling (SEM) (Hair, Black, Babin, Anderson, & Thatham, 2006). The SEM technique is suitable for the evaluation of hypotheses derived theoretically in research models. Also, it can evaluate the relationships between exogenous and endogenous variables. This study follows a two-step approach suggested in SEM analysis (Anderson & Gerbing, 1988). First, we assess the measurement model, which yields the adequacy and quality of our measure, and second, we evaluate the structural model, which checks the statistical significance of our hypotheses. The study uses the AMOS 26.0 for Windows software.

4.1 Measurement model estimation

We assessed the model fit by running the confirmatory factor analysis (CFA) and the model fit indices. The model presented good model fit metrics in line with previous research (Bagozzi & Yi, 1988; Bélanger & Carter, 2008; Kurfali, Arifoglu, Tokdemir, & Paçin, 2017). The model fit indices are reported in Table 4.

Table 4. Measurement model fit summary

Fit index	Recommended value	Research model
X2 (N=237)	N/A	238.191
d.f.	N/A	94
X2 / d.f.	<= 3	2.53
RMSEA	<= 0.08	0.08
GFI	>= 0.80	0.89
AGFI	>= 0.80	0.84
NFI	>= 0.90	0.91
IFI	>= 0.90	0.94
TLI	>= 0.90	0.93
CFI	>= 0.90	0.94

Following the approach recommended by J. F. Hair et al. (2006) and Anderson & Gerbing (1988), we analyzed for internal consistency, convergent and discriminant validity of the measures, and the

goodness-of-fit of the measurement model using a confirmatory factor analysis (CFA) with a maximum likelihood estimation procedure in AMOS. The internal consistency determines the reliability of the scale and is evaluated using the Cronbach's Alpha (CA) (all CA > 0.8). The convergent validity refers to the degree to which the theoretical items that should be related, are in fact related (Hair et al., 2006). We assessed the convergent validity using the average variance extracted (AVE) and composite reliability (CR). The recommended threshold for AVE is above 0.5, and for the CR is above 0.7, respectively (see Table 4). The discriminant validity, which refers to the degree to which the measurement items of a construct measure the construct in question and no other constructs in the model, was evaluated by the Fornell & Larcker (1981) criterion, in which the square root of AVE should be greater than its correlation with any other construct (see Table 5).

Table 5. Convergent and discriminant validity criteria.

Construct		CA	CR	AVE	1	2	3	4	5
1	Addiction	0.85	0.85	0.59	**0.77**				
2	Influence	0.84	0.84	0.64	0.49	**0.80**			
3	Immersion	0.90	0.90	0.75	0.67	0.51	**0.87**		
4	Membership	0.80	0.80	0.58	0.47	0.74	0.55	**0.76**	
5	Self-assertion	0.93	0.93	0.81	0.48	0.68	0.40	0.46	**0.90**

Note: CA=Cronbach's Alpha, CR=Composite Reliability, AVE=Average variance extracted. The values in bold are the square root of AVE.

4.2. Structural model estimation

After assuring that there is an acceptable model fit, we included the control variables, namely age, hours of Facebook use per day, and the number of Facebook posts per day. Then we evaluated the structural model to test the statistical significance of our hypotheses. The fit indices were appropriate (see Table 6).

Table 6. Model fit indices for the structural model

Fit index	Recommended value	Research model
X^2 (N=237)	N/A	266.727
d.f.	N/A	127
X^2 / d.f.	<= 3	2.10
RMSEA	<= 0.08	0.07
GFI	>= 0.80	0.89
AGFI	>= 0.80	0.84
NFI	>= 0.90	0.90
IFI	>= 0.90	0.95
TLI	>= 0.90	0.93
CFI	>= 0.90	0.95

Using the squared multiple correlation (SMC) our model explains 57% of the variance in the online social media addiction (SMC = 0.56). The significance of path coefficients indicates the three hypotheses that were supported, namely H1 ($p < 0.001$), H5 ($p < 0.05$), and H6 ($p < 0.05$). Three hypotheses were rejected, H2, H3, and H4. The control variables, namely age, number of usage

hours, and number of Facebook posts, were not statistically significant over the dependent variable (addiction to social media use). Figure 2 depicts the structural model results, which include the path coefficients, their corresponding levels of significance, and 95% bias corrected confidence interval.

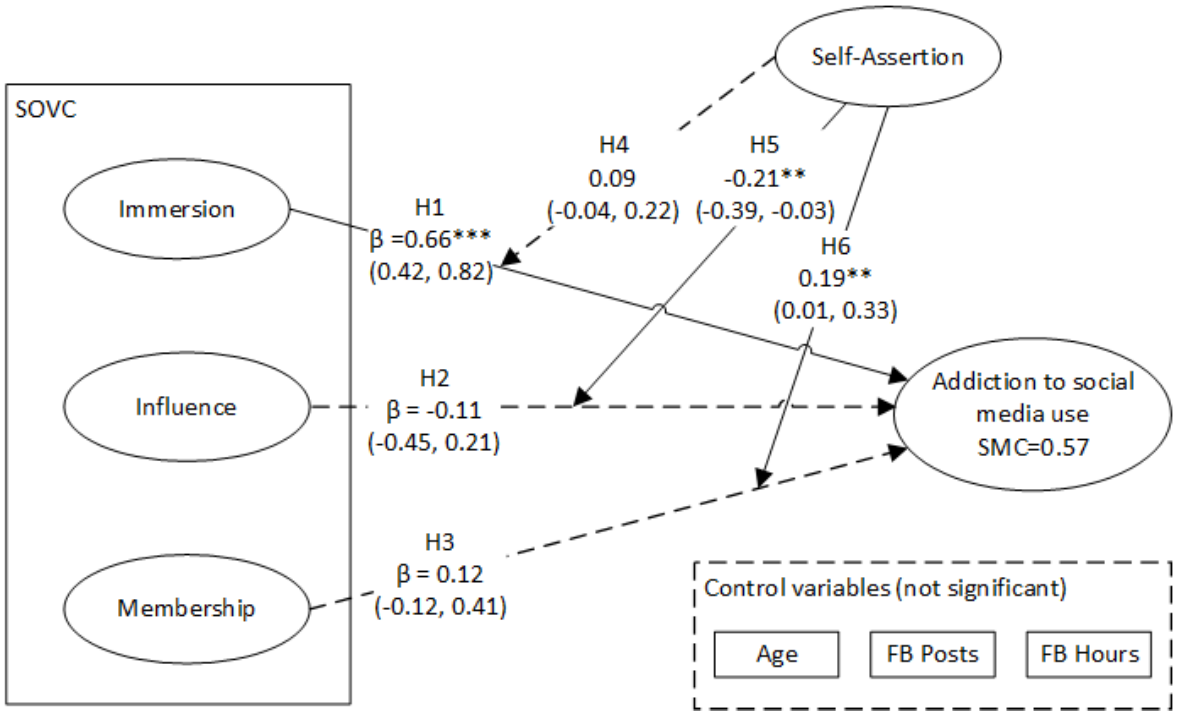

Figure 2. Structural model results

Notes: Significant at **p < 0.05; ***p < 0.001. Non-significant (ns) paths are in dotted lines. Confidence interval are in parentheses.

4.3. Moderation analysis

Self-assertion was found to have a significant moderating effect on influence and membership, and not significant on immersion, therefore supporting H5 and H6 and rejecting H4. Figure 3 shows the cross-over interaction for both influence and membership. Our results suggest that for high self-assertion, the levels of addiction will be higher for low influence values. Conversely, addiction levels are higher for low self-assertion when the influence is high. On the other hand, the results for moderation of self-assertion over membership show that for high self-assertion the individuals present higher levels of addiction when membership is higher. In the case of low self-assertion, the addiction is higher when membership is low.

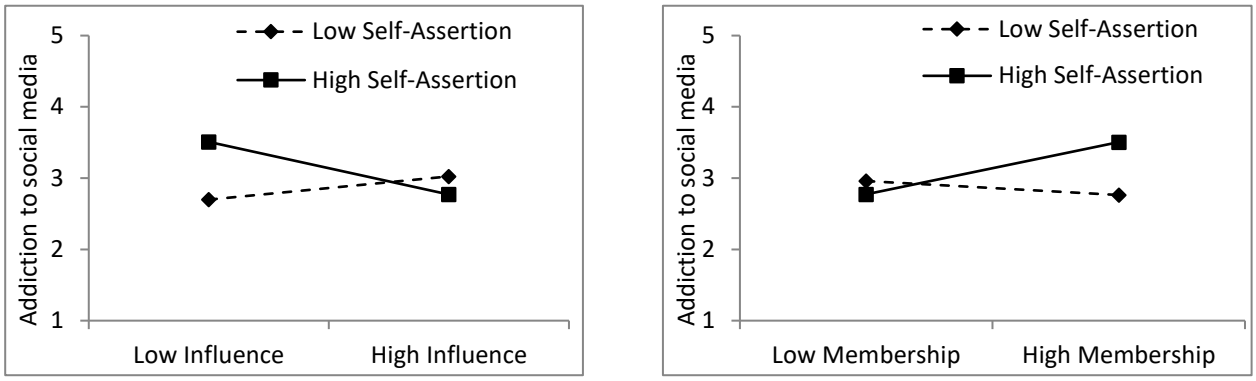

Figure 3. Moderator effects

5. Discussion

Since the emergence of the Internet, the overuse of different online services such as games, chat, and social media, has raised concerns about the negative consequences for the well-being of users. This overuse has attracted the interest of the scientific community to study the phenomenon of online addictive behavior (Yellowlees & Marks, 2007).

Previous literature has studied the negative implications of the overuse of online social networks (Maier et al., 2015; Turel & Serenko, 2012; van den Eijnden et al., 2016). This has included studies investigating the relationship between social media use and suicide ideation among university students (Jasso-Medrano & López-Rosales, 2018). Other studies have focused on individual characteristics and personality (Cecilie S. Andreassen & Pallesen, 2014; Cecilie Schou Andreassen, Pallesen, & Griffiths, 2017; Kircaburun et al., 2019). We consider that the frequency of use may vary on the context or specific periods of time during which information flow becomes more engaging, as is the case of public unrest analyzed in this study. We have sought to take some preliminary steps toward an understanding of the association between sense of virtual community and addictive-like symptoms when triggered by external events (public unrest).

Our study is in line with Osatuyi & Turel (2018), who suggest that certain user behaviors can probably be better explained by studying the momentary addiction symptoms, rather than by general addiction. That is the case of long periods of public unrest, when the content on social media becomes more engaging and creates the conditions for greater immersion. Our study finds that self-assertion moderates the effect of the dimensions of sense of virtual community on addiction.

5.1. Implications for theory

We examined the three dimensions of the SOVC (immersion, influence, and membership), and the role of self-assertion as moderator of the effect of the SOVC dimensions on addiction to social media use. This study makes several contributions to the body of knowledge in the context of addictive usage behaviors.

First, we contribute to the recent efforts of theory building by testing the association between the SOVC dimensions and the addiction to social media use. Of the three dimensions of SOVC, only

immersion had a significant effect on the addiction. This finding supports hypothesis (H1), that highly engaging content generated during periods of public unrest contributes to create the state of flow (Csikszentmihalyi, 2000). Consequently, leading to compulsive social media use. The other two SOVC dimensions, the perception of influence and perception of membership, failed to obtain statistical significance. This finding may suggest that addictive behaviors are more related to the engaging content than to the affective ties and social interaction of social media.

Second, we evaluated self-assertion as moderator of the three dimensions of SOVC on the addiction to social media use. Even though not having a significant main effect, the interaction between self-assertion and influence and membership was statistically significant, but not significant regarding the interaction with immersion. In both significant cases (influence and membership) the moderation resulted in a cross-over interaction. This means that: (i) in the case of influence, the individuals with lower perception of influence on others and high self-assertion may be more likely to show addiction to social media use. This finding may imply that the motivation for an individual to express herself or himself in social media is not related with the desire to influence the opinions of others. (ii) In the case of membership, individuals with stronger feelings of membership are more likely to show addiction to social media use in the presence high self-assertion. (iii) And finally, the interaction between immersion and self-assertion was not statistically significant. This could mean that once the individual reached a mental state of full immersion, involvement, and enjoyment, the conscious desire to express herself or himself no longer has an effect on the addiction to social media use.

Finally, the control variables tested in path analysis (age, FB posts, and FB usage hours) are not statistically significant on addiction. Our findings contradict previous literature reporting evidence that age moderates the behavior on IS intention and on usage (Choi & Kim, 2014; Kim, Mirusmonov, & Lee, 2010; Venkatesh, Thong, & Xu, 2012).

5.2. Implications for practice

The findings of this study offer important implications for public authorities and mental health practitioners. Public authorities and policy makers should be aware that during events of public unrest, citizens are exposed to high levels of engaging content on the social media. Information such as fake news, political views, etc., can increase the likelihood of showing addictive usage behavior on the use of online social networks. Literature acknowledges that the negative effects of online social media addiction not only affect the individual, but have implications for the whole of society (Seo & Ray, 2019; Turel & Serenko, 2012). Therefore, public authorities and governments should propose policies to facilitate the control of fake news (Bronstein et al., 2019). Mental health practitioners may design accurate measurement instruments to assess the negative consequences of addictive or compulsive usage behavior on social media.

6. Conclusions

The use of online social media transformed our lives, bringing significant benefits. However, the overuse has a “dark side” that can result in addiction-like symptoms. During periods of public unrest, the events happening in the offline world may have a direct impact on the people’s social circle. This may expose the individual to more engaging information that may in turn lead to addictive usage behavior. Our study provides evidence that immersion (a dimension of SOVC) is the main driver of

addiction to social media use. The other two dimensions, the desire of influencing others and the feeling of membership, may become significant when moderated by the personal desire to express oneself to others (self-assertion). The addiction to social media use is a problem that increases every day and that may have negative consequences for individuals and for the whole of society. Therefore, researchers should pay special attention to the use behavior during times that may generate highly engaging content.

6.1. Limitations and future research

At least two limitations should be acknowledged in this study. First, the research model evaluated is purely exploratory and by no means can be considered an exhaustive model that explains all of the drivers of addiction to social media use. Generalizations should be made with caution. Future research can add new variables to our model or combine it with different theories to provide further insights about the drivers of addiction in the online social media context. Second, our study relies on a cross-sectional sample to evaluate the research model. Consequently, our study cannot conclude whether the addiction-like symptoms triggered by public unrest remain over time. Future research may use a longitudinal sample to re-evaluate our research model. It would be valuable to determine whether the effects that arise during events of public unrest persist thereafter or disappear.

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