Alone in the Crowd: An Investigation of the Factors Related to the Feeling of Loneliness in Social Network Sites

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Abstract

Social network sites (SNS)can be a powerful tool that connect people. However, online relationships could be only numbers with low quality. Comparison with celebrities, concerns about followers, uncivil comments and other factors might make people feel lonely inside these platforms. This study attempts to examine the relationships between the feeling of loneliness in SNS (LSNS) and three groups of factors: user-related (age, gender, educational level); use-related factors (the platform used, caring about followers, comparison with celebrities) and SNS-environment factors (trending Hashtags, uncivil comments). To achieve this purpose, a questionnaire was designed based on the Three-Item Loneliness Scale of Hughes, Waite, Hawkley, & Cacioppo (2004). The respondents (N=208) were Saudi inhabitants. The results show a significant positive correlation between LSNS and loneliness in real life, a negative relation with age, a positive correlation with Hashtags and celebrities' comparison. No significant correlation was detected with none of: gender, education, platform used.

Keyword: Loneliness, Social Media, celebrities, social comparison, Hashtags, online comments, followers.

Ever since the emergence of social networking sites (SNS), it has remained a question without a conclusive answer whether social networks make people more or less lonely (Yang, 2016). Social media is a powerful tool that can connect family and friends as well as link people with similar interests (Bell, Fausset, Farmer, Nguyen, Harley and Fain, 2013), yet, there are concerns about how these sites might affect the well-being of their users. For instance, in 2011, the American Academy of Pediatrics (AAP) expressed their concern about the potential negative mental health effects of children's and adolescents' SNS use (O'Keeffe & Clarke-Pearson, 2011). Moreover, some studies show that, in spite of their highest rate of usingSNS, young adults may be lonelier than other age groups, and that the current generation may be the loneliest ever due to their higher usage rate (Pittman, M. and Reich, B., 2016, p.703), that lead some scholars to connect this increase in adolescents' depressive feelings to the low quality of interpersonal connections in SNS(Pantic et al., 2012) and the negative social comparison behaviors with friends in these spaces (Chou & Edge, 2012).

Loneliness is an important predictor of depressive symptoms (e.g., Vanhalst, Luyckx, Teppers, &Goossens, 2012, cited in Frison&Eggrmont, 2015), hence, it is important to give more focus on the relation between SNS and the feeling of loneliness.

The present study contributes to knowledge by focusing on loneliness in the ecology of social media. Comparison with celebrities, concerns about the number of followers, uncivil comments and other features of the SNS' environment might make people feel lonely inside these platforms. Hence, the main study questions are: can SNS make people feel lonely? and what factors are related to the feeling of loneliness in SNS (LSNS)? The study examines the relationships between LSNS and three groups of variables: a) individual-related (i.e. Demographic characteristics: age, gender, educational level); b)use-related factors (e.g. the platform used, focusing on followers, comparison with celebrities) and c) and SNS environment factors(i.e.

Hashtags, uncivil comments).To achieve this purpose, a questionnaire was designed based on the *Three-Item Loneliness Scale*ofHughes, Waite, Hawkley, & Cacioppo (2004).

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The respondents (N=208) were Saudi inhabitants from different ages, regional and educational levels, and they completed the online survey through a snowball sample approach.

Literature Review

There are many previous studies about the relation between using SNS and loneliness. Some studies suggest that using SNS can have positive effects, such as social support, training social skills, social capital, on users (e.g. Ellison, Steinfield, & Lampe, 2007; Bonetti et al., 2010; Vitak & Ellison, 2013; Pittman, 2015, Pang, 2018).Others find that it can have negative consequences (e.g. depression, social isolation) on users (e.g. Lou et al., 2012; Primack et al., 2017).On the other hand, some studies found that they neither increase nor decrease the feeling of loneliness (Agadullina, Lovakov & Kiselnikova, 2020; Appel, Marker and Gnambs, 2020).

Another argument is that SNS create a paradox for social connectedness (Allen, Ryan, Gray, McInerney and Waters, 2014); on one hand, they elevate the ease in which individuals may form and create online groups and communities, which consequently reduce social loneliness, but on the other hand, they can create a source of alienation and ostracism, which suggests that they increase emotional loneliness. Others found that they have a multidimensional nature (Błachnio, & Przepiorka, 2019); a low level of loneliness was a predictor of high SNS use, while the high use was a predictor of loneliness.

A major reason of these differences in the outcomes lays in the way loneliness is perceived and framed in each study. In some studies, loneliness was perceived as the absence of group ties and connections with other people (i.e. Bonetti et al. 2010; Deters and Mehl, 2012;Baecker et. al. 2014; Allen, Ryan, Gray, McInerney and Waters, 2014; Quinn, 2018; Pang, 2018),while only few studies, perceived it also as an emotional absence of an intimate and emotionally close attachment (i.e. Agadullina, 2020, Frison & Eggermont, 2015). These two perspectives were described as the types of loneliness according to Weiss (1973): social and emotional loneliness.

Another important aspect is the methodological approaches that were taken. The inconclusiveness and incongruity in the research regarding the effect of SNS on loneliness implies that there is need of pragmatic and pluralist methodological approaches combining qualitative and quantitative methods to address the topic (Beneito-Montagut, Cassián-Yde & Begueria, 2018, p.24). There is also lack of longitudinal qualitative studies, such as ethnographies, able to provide a more nuanced account of the internet's effects. On one hand, the studies reviewed used a variety of measurements to account for loneliness making them difficult to compare and thus build upon research findings (p.24).

The previous studies will be reviewed into different categories.

LSNS and Loneliness in real life

An essential factor that can affect the relation between SNS and loneliness is the **users' psychological status**. Psychological distress (Dahlberg et al., 2015) and the level of loneliness before using SNS can have an impact on the way SNS affect them. For instance, Bonetti et al. (2010) found that students who were lonely in real life, were more likely than nonlonely students to communicated online in order to meet new people and feel that they belonged to a group. The lonely students acknowledged that they felt less shy and more comfortable when they were chatting online, as compared to when they communicated face to face. This tendency can be explained by the fact that online communication reduces anxiety-inducing stimuli, such as eye contact, and given this effect, online social media may allow socially anxious adolescents to form stronger relationships, which in turn could decrease their loneliness (Allen, Ryan, Gray, McInerney and Waters, 2014, p.24). Zhang, Zhou & Pei (2015) also revealed that loneliness was a positive predictor of mobile phone addiction. The study of Błachnio, & Przepiorka (2019) show supporting results that a low level of self-esteem and satisfaction with life were predictors of Facebook intrusion, which in turn was a predictor of loneliness. The results demonstrate a complex multidimensional nature of the relation between SNS use and Loneliness that should be highly considered in future studies.

H1: LSNS will be positively associated with loneliness in real life**.**

Loneliness and user-related factors

A body of research addressed the relation between SNS usage and loneliness in the light of some demographic characteristics such as age, gender or educational level.

Age: Age is one of the major factors that was associated with effect of SNS on loneliness. Loneliness is likely to be an important aspect of aging (Hughes et al, 2004), yet when it comes to SNS, studies shows a positive effect of the use of SNS on older adults (Bell et al., 2013;Baecker, Sellen, Crosskey, Boscart & Barbosa, 2014; Quinn, 2018) in reducing loneliness and enhancing their well-being.

This could be due to the fact that maintaining social connectedness become more difficult for older adults due to mobility limitations, chronic diseases, health conditions, and other age-related issues, and these circumstances decrease physical connectedness with friends, family, and community (Bell et al. 2013; Victor, Scambler, Bowling, & Bond, 2005), henceforth,SNS offer an affordable and accessible technology for enhancing the sociality and well-being for older adults (Quinn, 2018).

On the other hand, loneliness is a phenomenon that could be experienced in all age groups such as children and adolescents (Perlman & Landolt, 1999). Although some research indicate that younger adults showed increased social engagement in all forms of participation (De Jong Gierveld et. al, 2006).There are studies show that young adults could be more *vulnerable to loneliness* due to the instability of their social networks, related to changes in school, identity exploration, or physical changes that can make young people vulnerable to exclusion (Qualter et al., 2013, 2015). Henceforth, the vulnerability of young adults to loneliness could make them feel lonelier in SNS comparing to their real lives:

H2_a: LSNS will be negatively associated with age.

Gender: Another individual-level factor that has been shown to have an impact on loneliness is gender. Multivariate longitudinal analyses reveal different predictors of loneliness for men and women (De Jong Gierveldet. al., 2006).Women are consistently more likely to report being lonely than men (Jylhä, 2004; Victor & Yang, 2012; Nicolaisen and Thorsen, 2014; Dahlberg et al., 2015). However, Nicolaisen and Thorsen (2014) found that men were more socially lonely than women, but women were more emotionally lonely than men(p.251).In the term of SNS use, the findings of Błachnio & Przepiorka (2019) show that women scored higher than men on Facebook intrusion, and Facebook intrusion was a predictor of loneliness.

H2_b: LSNS will be positively associated with female gender.

Education: Moreover, the effect of the educational level is connected to the employment and financial status. people with lower levels of education are less likely to be employed and, or more likely to be employed in low-pay jobs. They also have lower levels of financial capability, which in turn can negatively affect their economic security, well-being, and quality of living conditions (De Jong Gierveld et. al., 2006).

H2_c:LSNS will be negatively associated with educational level.

Loneliness and use-related factors

An important approach to address LSNS is through the usage. To ask questions about: what 'choice' does the user make in SNS that might amplify the loneliness feeling? The 'choice' here could be a practice (time spent, using certain platforms, private/public account, broadcasting/browsing, etc.) or an attitude of mind the user may take (how to perceive celebrities, how to evaluate one's number of followers, wither to trust online friends or not, etc.). The majority of studies treat SNS as homogeneous technology, and assume that there is one type of use with one direct effect, whereas, the same person can use SNS in multiple different ways and have different results.

Moreover, many studies ignore the fact that the meanings in these sites are 'socially constructed'; they are 'collectively produced', interacted and 'co-shaped' (Beneito-Montagut et al, 2018, p.24). SNSare public spaces, and their content is substantially shaped by their users' generated content. The environment of the SNS could change according to the people in these platforms (e.g. many SNS gained popularity because of the influencers that attend them). These platforms 'environment will keep changing as long as the users are changing too. Hence, we cannot assume that SNS will have a constant effect on loneliness or any other variable. Each experience of the same SNS in different periods of time with different mass of users can be different (e.g. the atmosphere of Twitter/Facebook in2020 is entirely different from2010). However, this assumption needs further discussion and further longitudinal research.

Moreover, almost all the literature reviewed overlooked how SNS nowadays provide a different personalized experience to every user according to his/her own use. They use cookies and algorithms to customize their services with more relevant content, like tailored trends, stories, news, ads, and suggestions for people to follow.

For example, they trace which parts of users' Twitter timeline so that they can show them the appropriate new content. They give each user their relevant suggestions about who they might enjoy following based on her visit to some websites.[2]

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[2]https://help.twitter.com/en/rules-and-policies/twitter-cookies

The platform used: a number of studies have assessed specific behaviors associated with particular social media platforms (Robinson et. al.,2019). Different platforms can have different impacts on individuals' attitude and behavior (Chen, Ho, & Lwin, 2016; Ho, Poorisat, Neo, & Detenber, 2014). The study of Pittman and Reich (2016) proposed that only image-based platforms (e.g., Instagram, Snapchat) have the potential to ameliorate loneliness due to the enhanced intimacy they offer, to the contrast of text-based platforms (such as Twitter) that offer little intimacy. The results of this quantitative study that used a survey (N = 253) suggests that loneliness may decrease, as a function of image-based social media use.

H3_a:LSNS will be negatively associated with the exposure of image-based platform.

Some studies focused on the type of use in the SNS concerning how active, public and consistent they post and update their profile, and how these practices are related to the SNS's impact on loneliness (e. g. Deters and Mehl, 2012, Frison & Eggermont, 2015, Yang, 2016). Deters and Mehl (2012) focused on the psychological effects of posting status updates on Facebook using an experimental design. Results revealed that the experimentally induced increase in Facebook status updating activity reduced loneliness. The study of Frison & Eggermont (2015) focused on the types of use of Facebook to elucidate their relationships with loneliness and adolescents' depressive symptoms. The study differentiated between *passive* and *active* Facebook use. The results show that whereas active Facebook use leads to positive outcomes in the long run, passive Facebook use revealed a more harmful impact on adolescents' well-being. The study of Yang (2016) explored associations between loneliness and various Instagram activities. A total of 208 undergraduate students completed a self-report survey. Findings showed that Instagram interaction and browsing were both related to lower loneliness, whereas Instagram broadcasting was associated with higher loneliness.

Comparison with celebrities: The study of Seo& Hyun (2018) examined how the use of SNS for celebrity-related information and interactions influences users' life satisfaction. Data analysed demonstrated that celebrity-related SNS activities decrease users' life satisfaction by increasing relative deprivation through comparison with celebrities.

H3_b: LSNS will be positively associated with comparing to celebrities.

Followers: The number of followers that users have on SNS determines their popularity and how 'valuable' they are in these platforms. The followers' number is an important objective for some users; they focus on gaining followers from the beginning and they compare themselves with others, while other users might not care that much about collecting followers and decide from the beginning that their main aim is to explore and browse rather than to gain popularity and followers. Hence, I decide to check this side of the use and to ask the participants if they do care about the number of followers they have or feel that the shortage of followers make them feel lonely in SNS?

H3_c:LSNS will be associated with caring about followers.

Loneliness and SNS environment factors

The features related to the SNSenvironment might take a vital role in the loneliness. These features might change from time to time according to the technological development. These features could include: trending Hashtags, comments, the 'block', 'mute' and 'like 'buttons etc. It is important to ask questions about whether these features might trigger or enhance the feeling of loneliness among the users.

Trending Hashtags: The hashtag is a main feature of SNS environment, most commonly, Twitter and Instagram. Hashtags allow people to find posts that are relevant to their interests and interact with other social media users who share those interests by joining the ongoing conversation between different users about a certain topic. The highest active hashtags appear as *Trending Hashtags* in the explore page and allow users to see the most discussed topics in the platform. Sometimes, hashtags are used to show an advocate toward or against a certain case.Hence, it is important to explore whether the nature and topics of hashtags with different topics, interests or attitudes could make users feel lonelier in SNS.

H4_a: LSNS will be positively associated with exposure of Hashtags.

Uncivil Comments: Uncivil comments are a major issue in the environment of SNS. Journalists and professional community managers struggle to moderate the seemingly ever-increasing number of uncivil comments (Bergström and Wadbring, 2014). Research has documented various negative effects of uncivil comments, and that victims of bullying report significantly more loneliness than normal people (e. g. Tritt & Duncan, 1997).As a response to these concerns, Twitter has announced a major adjustment to the techniques of reply on May, 2020.

The Director of Product Management at Twitter stated that 'sometimes, unwanted replies make it hard to have meaningful conversations'[3]; they decided to give people more control over their conversations with the ability to hide replies. Regardless of the controversy about this decision, this change is apparently a respond to the increasing complains among users about cyberbullying and uncivil comments and their negative effects on their well-being.

However, even though SNS platforms allow users to report uncivil comments to site administrators, many users who receive uncivil comments refrain from doing so because they think that this action does not worth (Ziegele, Naab & Jost, 2020).Yet, later they may tend to withdraw and keep silent during online conversations. This canbe applied in the context of spiral of silence theory. According to the theory, this factor might affect the withdrawal and feeling of loneliness among individuals (Tritt& Duncan, 1997).

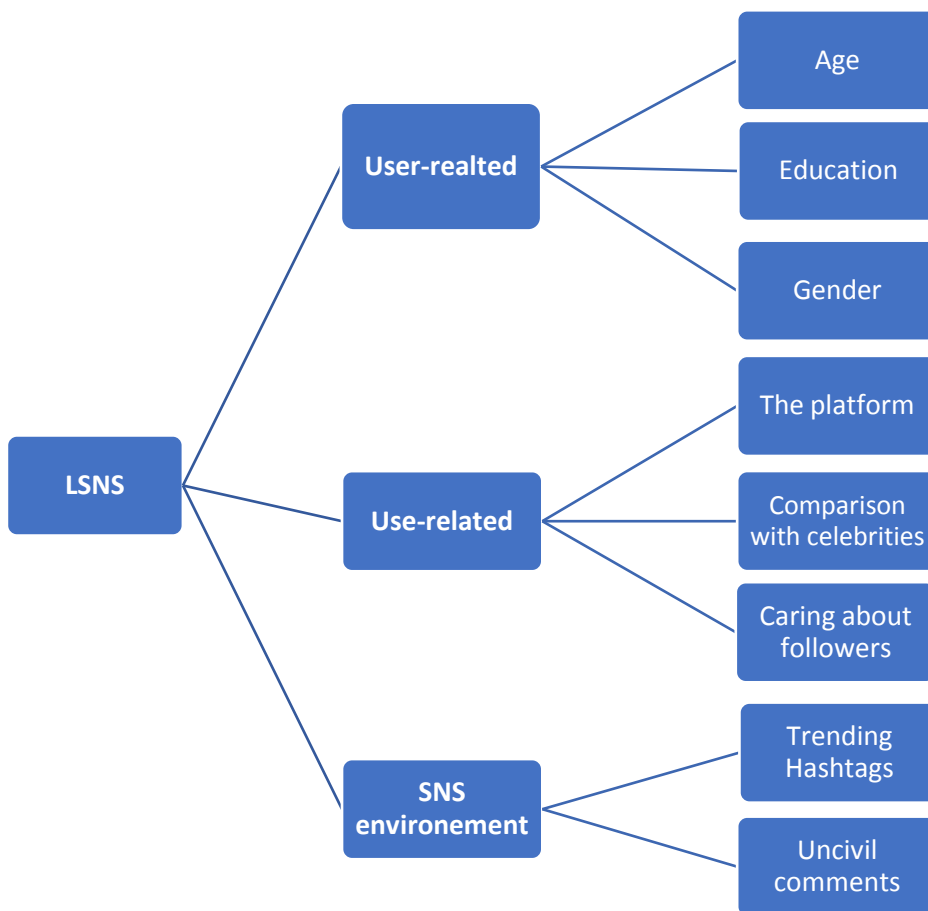**H4_b**: LSNS will be positively associated with the exposure of uncivil comments.

Figure 1: Hypothesized relationships between LSNS andthe three groups of factors

Theoretical Framework

Concept of Loneliness

Loneliness could be defined as "the unpleasant experience that occurs when a person's network of social relations is deficient in some important way, either quantitatively or qualitatively" (Perlman & Peplau, 1981, p. 31). The term 'qualitatively' implies that loneliness could include situations where the quality or intimacy one desires has not been reached. It is also important to mention that loneliness is sometimes also addressed under the term: perceived social isolation (Cacioppo, Fowler, & Christakis, 2009). Hence, Loneliness is a self-perception or feeling more than a status that can be measured.

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[3]Twitter. *Our use of cookies and similar technologies*. Retrieved July 3, 2020, from https://help.twitter.com/en/rules-and-policies/twitter-cookies

This feeling of loneliness is accompanied by feeling of emptiness and rejection, and the opposite of loneliness is belongingness or social embeddedness (De Jong Gierveld, Van Tilburg & Dykstra, 2006, p.1). Moreover, the individuals' subjective evaluation of their achieved relationships in association with their relationship standards is an important approach that should be acknowledged when studying loneliness (De Jong Gierveldet. al, 2006).This study will be focusing on the emotional LSNS; how a person feels lonely, different and rejected inside the environment of SNS.

Social comparison theory

Social comparison theory is one ofthe most established and well-known social-psychological concepts (Reer, Tang &Quandt, 2019). It is based on Leon Festinger's pioneer work in which he argued that human beings have an innate drive to evaluate their opinions and abilities, and when there is no objective norms are available for them, people tend to gain information by comparing themselves with others (Festinger, 1954 cited in: Reer, Tang &Quandt, 2019).

Previous studies indicated that individual life satisfaction is associated with a subjective evaluation of economic situation in comparison with that of others. Specifically, when people come across information about others, they relate the information to themselves, as social comparison theory emphasizes (Seo and Hyun, 2018, p. 3483).

People feel more relative deprivation when they perceive that they are unlikely to obtain the outcomes to which they feel entitled (Olson and Hazlewood, 1986).SNS provide an incubating environment for social comparisons; their users can easily compare themselves with other users or celebrities 'on dimensions that are relevant to self-worth such as attractiveness or social connectedness' (Appel , Marker and Gnambs, 2020).

The SNS' platform serves as a comparison incubator that provides greater affordances for social comparison with peers and celebrities (Perloff, 2014). They provide ample opportunities for celebrities' comparison, as users read celebrities' SNS updates, share celebrity news with friends, follow celebrities and glimpse their glamorous lifestyles (Seo and Hyun, 2018). The findings of Chou and Edge (2012) show that heavier Facebook users compare their normal offline lives with the online lives of others, which directly affects their well-being and self-evaluation; they were more likely to believe others are happier and have better lives.

Spiral of silence theory

The theory assumes that peoples' willingness to speak out publicly on morally loaded issues depends on their perceptions of majority opinions in society (Zerback and Fawzi, 2017, p.1035). Perceiving public support for their own views will increase willingness to speak out, while perceiving themselves as part of the minority will cause them to fall silent (Noelle-Neumann, 1974).However, scholars recently have discussed if a spiral of silence can occur online where communication contexts differ from traditional settings in various ways (Schulz and Rössler, 2012).

Method

Data collection and sample

A survey was designed to recruit participants online. An invitation link of the survey was sent directly to each participant to participate using snowball approach. Participants (n=208) were Saudi inhabitants from different regions, age groups and educational levels.

Measures

The measurement scales of loneliness vary regarding asking direct or non-direct questions about loneliness. Some measurement scales do not imply any reference to the term 'loneliness', whereas others include one or more explicit mention of loneliness.The Loneliness has a negative connotation, which makes it difficult to participants to talk about feeling lonely. The use of direct questions including the words "lonely" or "loneliness" to investigate loneliness is likely to result in underreporting in specific categories.Jylhä and Saarenheimo(2010) argued that by using indirect questions researchers justify their own definitions of loneliness; a direct question, on the contrary, reflects the loneliness as understood by the respondent (De Jong Gierveldet. al, 2006). However,De Jong Gierveld(2006) disagreed with this argument as 'many loneliness instruments consisting of indirect items correlate strongly with self-reports of loneliness, confirming their validity'.

In this study, the survey was online and the anonymity of the participants was completely assured; no name, email or address was asked. Hence, there were no reservations on the use of questions with direct reference to the explicit term of 'lonely' and 'loneliness'.

Loneliness was measured using a *Three-Item Loneliness Scale, with several question based on the s*hort scale for measuring Loneliness of Hughes, Waite, Hawkley & Cacioppo (2004). The scale displayed satisfactory reliability and both concurrent and discriminant validity (Hughes, Waite, Hawkley & Cacioppo, 2004, p. 668) and it has been tested in several studies and showed adequate reliability and validity (Penning, Liu & Chou, 2014).According to *Three-Item Loneliness Scale*, 3-point scale was used (*Hardly Ever, Some of the Time, Often*). The response categories were coded 1 (*hardly ever*), 2 (*some of the time*), and 3 (often). Each person's responses to the questions were summed, with higher scores indicating greater loneliness. However, the questions of the scale were asked twice: first, in the original way (loneliness in real life), and second, with an adjustment to fit the SNS.

Other variables were measured also using a three-scale questions (hardly ever (1), some of the time (2), often (3)). For SNS use, participants were asked about three factors: to what extent they do care about their followers' number,to what extent they do compare themselves to the SNS celebrities in matter of life style, and what type of SNS platform they use regularly (for this question, multiple answers of the 10 common SNS platforms were given). For SNS environment, participants were asked how often do they face uncivil comments in SNS, and to what extent they feel that the trending Hashtags are different from their interests.

Table 1: The three-question scale of loneliness in real life and LSNS

Loneliness in real life	Loneliness in SNS (LSNS)
First, how often do you feel that you lack companionship: *Hardly ever, some of the time, or often? 1 2 3*	**In Social network sites, how often do you feel that you lack companionship:** *Hardly ever, some of the time, or often? 1 2 3*
How often do you feel isolated from others? *Hardly ever, some of the time, or often? 1 2 3*	**In Social network sites, how often do you feel isolated from others?** *Hardly ever, some of the time, or often? 1 2 3*
How often do you feel left out: *Hardly ever, some of the time, or often? 1 2 3*	**In Social network sites, how often do you feel left out:** *Hardly ever, some of the time, or often? 1 2 3*

The Results

The survey was conducted in February 2020. A hyperlink of the online questionnaire was sent to some individuals in different regions and was asked to send it directly to people who use SNS in a snowball sampling method. The link was never published publicly to guarantee the participants' credibility.

		N	%	Loneliness in Real life M (SD)	LSNS M (SD)
Gender	*Male*	117	56%	2.02 (.809)	1.84 (.754)
	Female	91	44%	2.20 (.734)	1.97 (.737)
	Total	208	100%	2.10 (.780)	1.89 (.748)
Age	*Under 22*	26	12.5%	2.27 (.724)	2.19 (.694)
	22- 30	34	16.3%	2.35 (.691)	1.91 (.712)
	31- 40	47	22.6%	1.98 (.766)	1.87 (.797)
	41 - 50	38	18.3%	2.13 (.811)	2.00 (.735)
	Over 50	63	30.3%	1.95 (.812)	1.71 (.728)
	Total	208	100%	2.10 (.780)	1.89 (.748)
Education	*Low*	47	22.6%	2.94 (1.48)	2.53 (1.43)
	Middle	111	53.4%	2.71 (1.36)	2.42 (1.26)
	High	50	24.0%	2.64 (1.28)	2.40 (1.30)
	Total	208	100%		

It was very difficult to control the participants' characteristic. The data were collected (Feb 25 to Mar 5, 2020). When the number of participants reached the goal of over 200 (n=208), it was suspended. However, when the demographic characteristics of the participant were screened and analysed,unbalance was detected in some groups, particularly the age groups (**Error! Reference source not found.**) yet, it was too late to recollect new replies to rebalance the groups as the COVID-19 was already spread and the answers would be affected by the circumstances of the quarantine

if recollected. (the pandemic and quarantine circumstances might affect the feelings of anxiety and correspondingly loneliness).

As a manipulation check, the participants' responses to the three questions in the scale of loneliness in real life were summed (Cronbach's α 0.801). The responses to the LSNS were also summed (Cronbach's α 0.793).For correlation tests, we are going to take that weak positive correlation would be in the range of 0.1 to 0.3, moderate positive correlation from 0.3 to 0.5, and strong positive correlation from is from 0.5 to 1.0.

LSNS and Loneliness in real life

The results show that more than half of the sample (66.4%) recorded a medium to high level of LSNS, and (74.1%) with medium to high level of loneliness in real life.

	Loneliness in real life		Loneliness in SNSs	
	Frequency	Percent	Frequency	Percent
Low	54	26.0%	70	33.7%
Middle	80	38.5%	90	43.3%
High	74	35.6%	48	23.1%
Total	208	100	208	100

Table 1: LSNS and Loneliness in real life

The medium of LSNS among participants was (m=1.9) was slightly less thanthe medium of loneliness in real life (m=2.1).Moreover, higher number of participants (n=74) recorded high level of loneliness in real life comparing to those who recorded high level of LSNS (n=48). However, the moderate level of loneliness was recorder higher in SNS (n=90) than in real life (n=80).

To examine the relation between LSNS and Loneliness in real life, a Spearman test was used (Table 2). The test shows a correlation coefficient (r=.463)and (p <0.01), which means that there is a significant correlation at the 0.01 level. As long as (0.3 < r=.463 < 0.5), the correlation is considered moderate. That means that the hypothesis (H1) is true:there is a positive association between Loneliness in real life and LSNS.

			Loneliness in real life	LSNS
Spearman's rho	Loneliness in real life	Correlation Coefficient	1.000	.463**
		Sig. (2-tailed)	.	.000
		N	208	208
	LSNS	Correlation Coefficient	.463**	1.000
		Sig. (2-tailed)	.000	.
		N	208	208
**. Correlation is significant at the 0.01 level (2-tailed).				

Table 2: The Correlation between loneliness in real life and LSNS

LSNSand user-related factors

Age: The correlationtest between LSNS and the factor of age showsr (0.162), and p-value (0.019) < α(0.05) which indicates a significant negative correlation at the 0.05 level, which means that the hypothesis (H2_a) is true; there is a significant negative correlation between LSNS and age. LSNS gets less with older ages, and that younger groups have more feeling of LSNS. The first age group (age 16-22) recorded a mean of (m=2.19) out of 3 in the scale of LSNS, while the oldest group (age over 51) recorded a mean of (m=1.71) out of 3.

Education: The results show a correlation coefficient r(0.029) < (0.1), and a p-value(.677) > α(0.05), which means that there is no significant association between them and, hence, the hypothesis (H2_c) is false.

Table 3: The Pearson correlation test between LSNS and the platforms

Gender: The Pearson correlation test shows that r(.086) and p-value(.216) > α(0.05), which indicates a negligible correlation with gender and that the hypothesis (H2_b) is false.

LSNS and use-related factors

The platform used:

		LSNS	Facebook	Snapchat	Twitter	Instagram	Tiktok
LSNS	Pearson Correlation	1	-.102	-.109	-.012	.021	-.131
	Sig. (2-tailed)		.141	.118	.861	.769	.060
	N	208	208	208	208	208	208
Facebook	Pearson Correlation	-.102	1	-.070	-.007	.065	-.031
	Sig. (2-tailed)	.141		.318	.917	.350	.655
	N	208	208	208	208	208	208
Snapchat	Pearson Correlation	-.109	-.070	1	.100	.408**	.156*
	Sig. (2-tailed)	.118	.318		.152	.000	.025
	N	208	208	208	208	208	208
Twitter	Pearson Correlation	-.012	-.007	.100	1	.124	.100
	Sig. (2-tailed)	.861	.917	.152		.074	.149
	N	208	208	208	208	208	208
Instagram	Pearson Correlation	.021	.065	.408**	.124	1	.257**
	Sig. (2-tailed)	.769	.350	.000	.074		.000
	N	208	208	208	208	208	208

The Pearson correlation test (Table 3) shows no significant correlation between any platform and the level of LSNS, which means that the hypothesis (H3_a) is false.

Celebrities: 70% of the participants recorded that they do compare themselves to the celebrities at social media in medium level (some of the time), and 21% recorded a high level of comparison (often).The Spearman's correlation test shows that there is a significant correlation at the 0.05 level with r(.153) and p-value (.027) < α(.05).However, as long as (0.1<r=.153 < 0.3) this indicates a weak positive correlation.Hence, the hypothesis (H3_b) is true.

Followers: When examining the correlation between LSNS and caring about followers, the result shows r (.119) and p-value (.087) > α (0.05) (**Error! Reference source not found.**), which means that there is no significant correlation between LSNS and caring about followers. This demonstrates that the hypothesis (H3_c) is false.

LSNS and SNS environment factors

Trending Hashtags: The participants were asked to what extent they feel that trending Hashtags are different from their interests, and the results show that there is a significant positive relation with r (.175) and p-value (0.012) at the 0.05 level. However, as long as (0.1 < r=.175 < 0.3) the relation is weak.Hence, there is a significant correlation between LSNS and trending hashtags and the hypothesis (H4_a) is true.

Uncivil comments: When examining the correlation between LSNS and the exposure to uncivil comments (**Error! Reference source not found.**), the results indicate a significant positive correlation with r (0.179) and p-value (0.01) = α (0.01). However, as long as (0.1 < r=.179 < 0.3) the relation is considered weak. The results indicate that

	The Hypothesis	The Result	
1	**H1:** LSNS will be positively associated with Loneliness in real life.	true	Significant positive correlation (moderate)
2	**H2_a:** LSNS will be negatively associated with age.	true	Significant negative correlation (weak)
3	**H2_b:** LSNS will be positively associated with female gender.	false	No correlation
4	**H2_c:** LSNS will be negatively associated with educational level.	false	No correlation
5	**H3_a:** LSNS will be positively associated with the platform used.	false	No correlation
6	**H3_b:** LSNS will be positively associated with comparison with celebrities.	true	Significant positive correlation (weak)
7	**H3_c:** LSNS will be positively associated with followers.	false	No correlation
8	**H4_a:** LSNS will be positively associated with trending Hashtags	true	Significant positive correlation (weak)
9	**H4_b:** LSNS will be positively associated with uncivil comments.	true	Significant positive correlation (weak)

hypothesis (H4_b) is true.

The main findings are concluded in (**Error! Reference source not found.**).

Table 8: The main findings

The Discussion

The study found that there is a positive relationship between loneliness in both real life and in SNS. This goes with the argument of Dahlberg et al (2015) that psychological distress and the level of loneliness before using SNS can have an impact on the way SNS affect them. This result confirms that SNS can afford connectedness and social capital but do not necessarily decrease emotional-loneliness. Some studies found that loneliness in real life and the lack of adequate peer relationships may force people to use their smartphones more (e. g. Yayan, et. al., 2019. P.196), yet their constant usage does not necessarily imply that they do not feel lonely in these spaces.

The study showed a weak negative relationship between LSNS and age; that is, younger users are more expected to feel lonely in SNS, while older users feel less lonely than real life. This goes with the results of Qualter et al. (2013) that younger people are more vulnerable for loneliness and is also supported by many studies (Bell et al., 2013; Baecker, Sellen, Crosskey, Boscart & Barbosa, 2014; Quinn, 2018) that found thatSNS reduce the loneliness of old people and enhance their well-being. This could be subjective to their real-life social situations; when comparing SNS to their real life, SNS might make old people feel less lonely, (poor-get-richer) while younger ages might find that SNS environment make them feel less popular and accepted because of the comparison with others in these platforms (rich-get-poorer).

An important finding is that there is no significant correlation between the feeling of LSNSand gender, although many studies found that women are consistently more likely to report being lonely (e. g. Jylhä, 2004; Victor & Yang, 2012; Nicolaisen and Thorsen, 2014; Dahlberg et al., 2015); this indicates how the gender differences canfade in the virtual spaces.

Also, in contrast to our expectations, the results also showed no significant correlation with the platforms used, this could be understood as most of the participants (83%) uses three and more platforms. With the ease of smartphones apps, users today are multi-users and this makes it difficult to separate the effect of each one. Moreover, no support for a relationship between LSNS and the users' concern about followers.

In the study, the majority (91%) of the participants declared that they do compare themselves with celebrities (between some of the time and often). A significant positive correlation was detected, even though weak, between LSNS and the comparison with celebrities, which was expected according to the social comparison theory.

Regarding the SNS environment, a significant positive correlation was found between LSNS and trending Hashtags. This indicates that people find that trending hashtags topics make them feel different (and lonely as the correlation suggest). This could be explained in the light of the social comparison theory (e.g. when the trending topics are discussing celebrities' news), or in the light of the spiral of silence theory (e.g. when the trending Hashtags are advocating a cause that they disagree with). However, these are hypothesis and need further investigation. In addition, 48% of the participants declared that they face uncivil comments (between some of the time and often) and a positive significant correlation was found with LSNS. This finding demonstrates the hazardousness of the issue of uncivil comments in SNS and their consequences. If they are related to the feeling of loneliness, which is a predictor of depression, they could be also related to other mental-health issues.In summary, the findings showed that LSNS is positively related to user's age, comparison with celebrities, and the SNS environment factors (trending hashtags and uncivil comments) which emphasizes the need to focus on them in future studies.

Limitations

The study is subject to several limitations. First, the study is based on a small sample (n=208) that limits analytical power. Second, the lack of international diversity in the sample (all Saudi inhabitants) precludes the examination of crucial interactions between demographic factors and cultural dimensions.Third, the data used were self-reported; they were based on participants' report and awareness (For instance, people may not admit that they do compare themselves to celebrities, yet they do unconsciously).Fourth, the cross-sectional design does not allow testing for causality.

Conclusion

Like any other feeling, loneliness is very complex and difficult variable to be measured or studied. There are a large number of factors also that may affect the feeling of loneliness, such as social status, educational level, financial status, intellectual level, etc. should be given more consideration in further studies.

There is not much research being done regarding social backgrounds, including living conditions, neither considering other social, cultural and economic factors (Beneito-Montagut et al, 2018, p.24).This study has focused on a number of variables that were expected to affect the feeling of LSNS, however, many of them turned out to have no significant correlation. Nevertheless, these results will help other researchers either to conduct more tests to demonstrate these findings or to focus on other factors that were not covered in this study. The principal contribution of this work is that it is one of the first studies to focus on the feeling of loneliness in the realm ofSNS, rather than merely in real life. Regardless of the debate about the topic, SNS needs to be studied, also, as public spheres rather than merely as communicationtools. The study findings confirmed that the feeling of loneliness in the realm of SNS is positively related to the feeling of loneliness in real life. The study provides a valuable insight about the factors that could be related to LSNS. The results indicate that LSNS is more related to the SNSenvironment feature such as trending hashtags and uncivil comments.

To conclude, further studies should be conducted to examine how other SNS environment features might affect LSNS (such as the like, block, mute, timeline, DM etc.). Additionally, more studies should be done toexamine the effect of the change of SNS strategies (such as the change in reply options in Twitter. Also, other user-related factors, that were uncovered, such as the cultural and intellectual levels should be investigated. Furthermore, Future studies should emphasize integrating the different factors to provide a single comprehensive model so that the feeling of loneliness in SNS could be clearly understood.

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