



Social Networking and the Experience of Loneliness

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Abstract | Objective: This paper addresses the issue of social networks and loneliness in young adulthood. The aim of the paper is to analyse the possible association between feelings of loneliness and the use of social networks. Method: A total of 206 people (162 women and 44 men) participated in the research with an average age of 22.6 years. There were three data collection instruments used in the study. The first was the Social Networking and Instagram Activity scale designed to measure social networking behaviors and Instagram in particular. The Differential Loneliness Scale (DLS) (Schmidt & Sermat, 1983) was used to measure loneliness. The third instrument was the Social Network Attitude Scale which was used to collect data from February to March 2020. The collected data were processed using the programs Jamovi 2.3.26 and PSPP 1.6.2. Results: An association between loneliness and time spent during the day on social networks was shown using a χ^2 test ($\chi^2 = 6.26$, $p < .05$). Comparisons between persons with lower and higher levels of feelings of loneliness indicate that the majority of the observed reasons for using social networking sites are more emphasized by persons with higher levels of experiencing loneliness. A U-test indicated that the most significant difference is related to meeting new people ($p < .001$). In terms of Instagram, there were no significant differences found between being lonelier or less lonely. Loneliness is related to attitudes towards social networking ($r = .34$, $p < .001$) with lonelier people attaching more importance to social networking. Conclusion: The results show that there is an association between loneliness and social networking in young adulthood. The topic requires a more thorough exploration in future research.

Keywords | loneliness, social network, Instagram, young adulthood

Introduction

In today's world, there is constant pressure from virtual social networks to live an illusion rather than real life. In the cyberspace of anonymity, we often lose awareness of our own identity. We cling to fake stories published by both famous and unknown influencers with the quality of our social relationships being reduced to emoticons, snippets of news and filter-starring stories. As such, relationships have become shallow, impersonal, superficial and insufficient. Rather than fulfilling the basic social need of forming meaningful and deep relationships, we are moving away from the essence of humanity which perceives humans as social beings (Baumeister et al., 1995). Failure to meet this need can lead to the experience of loneliness.

While loneliness is sometimes confused with solitude, Tylová et al. (2014) have noted that loneliness does not mean solitude and solitude does not equal loneliness. While solitude is an objective state that is easily observable from the outside, loneliness concerns our perception of social interactions and their characteristics (Baumgartner, 2019). Loneliness is associated with feelings of sadness, alienation and rejection. Solitude, on the other hand, tends to be associated with a temporary state without negative feelings (Buchholz & Catton, 1999). In the case of loneliness, one is confronted with a very intense subjective experience of perceiving and regarding existing interpersonal relationships as inadequate (Gierveld et al., 2006; Tylová et al., 2014).

A phenomenon that has attracted a great deal of attention in recent years is the relationship between internet use and an individual's psychosocial health (Caplan, 2003). There are currently about 5.16 billion people, or about 64% of the world's total population, using the internet as a means of communication and a system for processing, retrieving and storing information across time and space. While some consider it a path to losing privacy, others regard it as a revolutionary tool in the field of social interaction (Digital 2023, 2023; DiMaggio et al., 2001; Brignal & Valey, 2005; Slevin, 2017). Social networking sites have also become an integral part of the modern lifestyle, with up to 4.76 billion active users and an average daily time spent online of around 6 hours and 37 minutes (Digital 2023, 2023).

Now the first generation of intense internet users is approaching adulthood. Children are growing up from birth with mobile phones and adults are part of a so-called shared experience effect. In other words, mutual viewing, commenting and sharing of personal profiles has become a defining aspect of the quality of social life (Althoff et al., 2017; Kietzmann et al., 2011; Lim et al., 2012; Losekoot & Vyhnánková, 2019; Malůš & Cencialová, 2020; S-O'Brien et al., 2011). Online media has created a whole new space where people can explore and experiment with different versions of themselves in the comfort and anonymity of their homes (Bargh, 2002; Livingstone, 2008; S-O'Brien et al., 2011; Turkle, 1995).

Opinions on social networks and their place in our lives are quite diverse. If used at an appropriate level and intensity, social media can be a great tool to strengthen existing relationships and make new connections. However, the digital world can also lead to the feeling of disconnection and exclusion from society (Spitzberg, 2006). It offers a unique way of quantifying friendships and presenting oneself in a certain light, impressing others and increasing social credibility. At the same time however, it involves comparison and confrontation which can sometimes lead to social isolation, disconnection and intense experiences of loneliness (Allen et al., 2014; Nowland et al., 2018; Pittman & Reich, 2016; Primack et al., 2017).

Young people today are abandoning the once-popular Facebook and focusing more on apps with dominant visuals such as Instagram. Indeed, Instagram has become one of the most used apps of this decade as it is always in line with the latest trends of visual culture (Clasen, 2015; Losekoot &

Vyhnánková, 2019). Images and videos capturing 'real' moments can elicit very positive reactions and responses from active users who consider the app a source of entertainment, inspiration and communication (Meier & Schäfer, 2018; Nowland et al., 2018). However, the same photos and videos can evoke strong negative emotions in passive users who only view others' profiles without creating their own content. There is a tendency to become envious, emotionally withdrawn and compare their lives with those of others. This can trigger both resentment and loneliness (Nowland et al., 2018). Recent research (Chen et al., 2019; Valkenburg et al., 2022) has shown that passive users tend to compare the quality of their lives with those presented on social media, increasing the perception that others are better off than they are. These feelings likely stem from the way people present themselves on social media where they post the more positive aspects of their lives (Appel et al., 2015; Chou & Edge, 2012; Jordan et al., 2011; Lup et al., 2015). Bonsaksen et al. (2023) have demonstrated that higher levels of loneliness were associated with more time spent on social networks, particularly among those who used social networks as a means of maintaining relationships.

Instagram is a unique application with a huge reach that combines various functions and features that can both positively and negatively influence its users' experiences to a great extent (Meier & Schäfer, 2018). For this reason, it was included as the main example of a social network in the current empirical study. The presented research focuses on an analysis of the relationship between particular aspects of social network use, specifically Instagram, and the experience of loneliness. There were three hypotheses formulated for the study.

Firstly, it was hypothesized that people with higher levels of experienced loneliness would be more motivated to use social networking sites compared to those who experienced a lower level of loneliness. Next, it was hypothesized that stronger social networking activity would be observed on Instagram by those who are lonelier compared to those who are less lonely.

Finally, a positive association between attitudes towards social networking and measures of experienced loneliness was expected, in that those with stronger feelings of loneliness would hold more pronounced attitudes towards social networking use.

Method

Subjects

A total of 206 young adults from the Czech Republic took part in the study. The sample was made up of 162 women (78.6%) and 44 men (21.4%) between the ages of 18 and 33. The mean age was 22.6 with a standard deviation of 3.26 and a median of 22.

Data collection process

The data collection was carried out from February to March 2020 and was done using a questionnaire survey. All data was collected through Google forms which enabled the original questionnaire battery to be converted into an electronic form. The questionnaires were distributed by sharing the link on Facebook and Instagram with Instagram users aged between 18 and 35 invited to participate. At the outset, potential respondents were briefly introduced to the research objectives and given a brief description of the questionnaires. At the same time, they were guaranteed anonymity of their answers.

Measures

There were three instruments used in the study. The first measure is the original Social Networking and Instagram Activities questionnaire. The primary sources for developing the questions were

based on studies by Matook et al. (2015) and Ross et al. (2009). The inspiration for the creation of the items came from studies by Matook et al. (2015); Ross et al. (2009); Kang and Wei (2020) and Ye et al. (2018). A total of six questions were analysed in this study, divided into two parts. The first part included three questions and concerned social networks in general (length of use, time spent on social networks and reasons for using them). The question regarding the reasons for using them had eight options (browsing profiles, communication with friends, getting acquainted with someone, work/study reasons, virtual world, playing games, taking part in competitions, information retrieval) to which respondents expressed their level of agreement on a six-point Likert scale. The three questions in the second part were related to Instagram. The first one related to the use of Instagram features. There were six options given (posting messages, rating others' posts, searching through hashtags, viewing Instagram stories, filming Instagram stories and searching for information) with the responses recorded on a frequency scale. The second question focused on reasons for sharing content. There were also six options given (encouraging others, amusing yourself and others, invoking discussion, promoting your own views, filling up your free time, I don't share contributions) with responses recorded on an agreement scale. The third one asked which people participants follow on Instagram. In this case there are five options given (people I know, people who inspire me, people who are doing well, people who are influential, people who share stories) with each one answered on an agreement scale.

The Differential Loneliness Scale (DLS) questionnaire (Schmidt & Sermat, 1983) was used to measure loneliness. It is based on respondents' subjective assessment of the quality and quantity of interactions in four domains: romantic/love relationships, friendships, relationships with family and relationships within the larger group/community. There are five interaction dimensions assessed within each category: presence versus absence, approach versus avoidance, cooperation, evaluation and communication. The survey used a short version of the questionnaire comprising 20 items, i.e., 5 questions for each of the four categories. In order to verify the translation, the Czech version was compared to the Slovak translation. The answers were given by the respondents on a six-point Likert scale (from strongly disagree to strongly agree), omitting the ambiguous middle option. For the analysis, the overall loneliness score was used as well as the sub-scores relating to romantic relationships, family relationships and relationships with friends and the wider community. The categories of friends and the wider community were combined due to the strong correlation between them. The Cronbach's α of the full scale and subscales were found to be adequate. The internal consistency of the DLS questionnaire reached .88; the subscale on romantic relationships reached .87; the subscale identifying loneliness within family relationships reached .73 while the subscale focusing on social relationships in general reached .72.

The third measure, the Social Networking Attitude Scale, was inspired by Ross et al. (2009) as well as Ellison et al. (2007) and Vries et al. (2018). A 20-question scale was thus developed with the respondent answering on a similar six-point Likert scale to that in the questionnaire measuring loneliness. The social networking attitude scale was subjected to an exploratory factor analysis. The 'minimum residual' extraction method was used in combination with an 'oblimin' rotation. The conditions for the factor analysis were met (Bartlett's Test of Sphericity $\chi^2 = 1929$, $p < .001$, KMO = 0.866). There were three factors extracted using a scree plot and an Eigenvalue of 1.5. In the first factor there were eight factors describing emotionally negative experiences related to network use. In the second factor there were nine items expressing emotionally positive experiences and two items expressing disengagement from network use. The internal consistency values using Cronbach's α were 0.89 for the whole scale; 0.89 for the subscale of negative evaluation; 0.84 for the subscale of positive evaluation and 0.78 and for the scale related to keeping distance.

Statistical data processing

The data were first entered into Microsoft Excel and then transferred to Jamovi 2.3.26 and PSPP 1.6.2 where they were analysed. The descriptive statistics, correlation analysis, comparison of group means, internal consistency, chi-square tests and factor analysis were calculated from the data.

Results

The results from the loneliness scale are presented in Table 1. The scores are converted to a single item and therefore range from 1 to 6. The mean for the overall loneliness measure is 2.63. Given the close correlation between the relationships with friends and relationships with wider society subscales ($r = .73$), the items were combined into a common subscale corresponding to the social loneliness dimension. The other two dimensions correspond to emotional loneliness (romantic relationships, family relationships). The division between emotional and social loneliness was introduced by Weiss (1973) and is commonly accepted. The rate of experiencing loneliness was highest in romantic relationships where it approaches the middle of the scale. The degree of variability was also highest in this case, indicating a greater differentiation of responses. Conversely, the lowest degree of loneliness is experienced within family relationships. The mean and standard deviation for the relationships within wider society are essentially the same as the overall score. The internal consistency of the whole scale and subscales is very good (Cronbach's $\alpha > 0.8$).

Table 1 Descriptive Statistics of Loneliness and its components

	Romantic	Family	Social	Loneliness
N	206	206	206	206
Mean	2.92	2.28	2.65	2.63
Median	2.40	2.00	2.60	2.63
SD	1.62	1.07	0.84	0.83
Minimum	1.00	1.00	1.00	1.00
Maximum	6.00	6.00	5.50	5.20
Cronbach's alpha	0.91	0.88	0.83	0.88

A Kolmogorov-Smirnov test was used to demonstrate the normality of the distribution of the loneliness scale and their subscales. Table 2 shows the correlations of the subscales with each other as well as with the total loneliness score. While they are all significant, the correlation between the romantic and family subscales as well as the romantic and social subscales are weaker, whereas the correlation between the family and social subscales is moderately strong. All the subscales correlate with the total score $r > 0.7$.

Table 2 Intercorrelations of the subscales of loneliness and correlation with the whole scale (n=206)

		Romantic	Family	Social
Family	Pearson's r	.259***	—	
Social	Pearson's r	.256***	.572***	—
Loneliness	Pearson's r	.703***	.741***	.819 ***

Note. *** p<.001

A further analysis was based on the overall loneliness score. As such, the respondents were divided into two groups according to the mean value (also corresponding to the median). The first group consisted of respondents with scores below the median whereas the second group consisted of those with scores above the median. Those in the second group had experienced higher levels of loneliness. The comparison focused on the observed behaviors on social media in general and on Instagram in particular. The first point of interest was whether there was an association between experiencing loneliness and length of time using social networks (divided into three groups - under 3 years, 4-7 years and over 8 years). The result of the chi-square test of independence was found to be non-significant ($\chi^2 = 1.42, p = .493$). Similarly, the association between loneliness and time spent on social media during the day was explored. The respondents were divided into three groups according to length of time spent per day (up to half an hour, 1-2 hours and more than two hours). The results are shown in Table 3, in which case independence was not confirmed ($\chi^2 = 6.26, p < .05$). A comparison of the groups with lower and higher levels of experienced loneliness shows those with stronger feelings of loneliness spend more time on social networks per day.

Table 3 Contingency table of social networks use per day and loneliness

Social networks using		Loneliness		
		Low	High	Total
Less than ½ hour	Observed	39	32	71
	% within row	54.9 %	45.1 %	100.0 %
1 - 2 hours	Observed	36	26	62
	% within row	58.1 %	41.9 %	100.0 %
More than 2 hours	Observed	28	45	73
	% within row	38.4 %	61.6 %	100.0 %
Total	Observed	103	103	206
	% within row	50.0 %	50.0 %	100.0 %

Table 4 provides a comparison of those with lower and higher levels of loneliness regarding reasons for using social networking sites. There were higher values found in all cases in the group with higher levels of loneliness. As these are single questions of the questionnaire, an ordinal Mann-Whitney test (U-test) was used as a statistical test of significance. There were four significant differences observed. The most significant difference was related to meeting new people ($p < .001$), followed by functioning in the virtual world and playing games (both $p < .01$) and taking part in competitions ($p < .05$). Thus, the results suggest a strong motivation for lonely people to use social networking sites.

Table 4 Reasons for social networking - comparing people with lower and higher levels of loneliness (U-test)

Items	Group	N	Mean	Median	SD	p
01	1	103	4.09	4.00	1.253	.572
Browsing profiles	2	103	4.17	4.00	1.18	
02	1	103	4.95	5.00	1.106	.165
Communication with friends	2	103	5.17	5.00	1.01	
03	1	103	2.38	2.00	1.147	<.001
Getting acquainted with people	2	103	3.05	3.00	1.23	
04	1	103	3.60	4.00	1.451	.293
Work/study reasons	2	103	3.80	4.00	1.50	
05	1	103	3.28	3.00	1.279	.007
Virtual world	2	103	3.77	4.00	1.14	
06	1	103	1.58	1.00	1.034	.002
Playing games	2	103	2.06	2.00	1.34	
07	1	103	1.83	2.00	0.951	.012
Taking part in competitions	2	103	2.24	2.00	1.18	
08	1	103	4.13	4.00	1.226	.066
Information retrieval	2	103	4.39	5.00	1.19	

Notes. 1 - low loneliness, 2 - high loneliness

The other questions in the Social Networking and Instagram Activities questionnaire are specifically related to Instagram. The respondents were asked about reasons for sharing posts on this platform, the types of people they follow on Instagram and the use of Instagram features. Table 5 reports the reasons for sharing posts and shows that there is little difference between those with higher and lower levels of loneliness. However, higher values are seen among those who have greater feelings of loneliness. In spite of this, statistical significance was only evident in the item invoking discussion (U-test, $p < .05$).

Table 5 *Reasons for sharing Instagram posts - a comparison of people with lower and higher levels of loneliness (U-test)*

Items	Group	N	Mean	Median	SD	p
01	1	103	3.03	3.00	1.29	.388
Encouraging others	2	103	3.21	3.00	1.39	
02	1	103	3.84	4.00	1.48	.353
Amusing yourself and others	2	103	4.05	4.00	1.34	
03	1	103	2.18	2.00	1.09	.039
Invoking discussion	2	103	2.54	2.00	1.19	
04	1	103	2.14	2.00	1.19	.528
Promoting your own views	2	103	2.24	2.00	1.22	
05	1	103	2.96	3.00	1.52	.229
Filling up your free time	2	103	3.20	3.00	1.44	
06	1	103	2.44	2.00	1.50	.979
I don't share contributions	2	103	2.44	2.00	1.51	

Notes. 1 - low loneliness, 2 - high loneliness

The main features of Instagram were posting messages, rating others' posts, searching through hashtags, viewing Instagram stories, filming Instagram stories and searching for information. As a result of their interconnectedness, the total score was calculated. The lower loneliness group was found to have $M = 3.05$ and the higher loneliness group $M = 2.9$. The non-significance of the difference was demonstrated by a t-test ($t = 1.36$, $p > .05$).

Indeed, greater differences between those less lonely and those who are lonelier were only manifested in the preference of the persons whose profiles are followed. The results are presented in Table 6 with the differences being tested with a U-test. While the less lonely scored higher on

the item "people I know", the lonelier group scored higher on the other items. There was statistical significance shown in the item "people who share their stories" ($p < .01$) and in the items "people who are successful" and "people who have influence" (both $p < .05$).

Table 6 People followed on Instagram - a comparison of people with lower and higher levels of loneliness (U-test)

Items	Group	N	Mean	Median	SD	p
01	1	103	5.03	5.00	1.08	.189
People I know	2	103	4.82	5.00	1.18	
02	1	103	4.47	5.00	1.26	.213
People who inspire me	2	103	4.72	5.00	1.08	
03	1	103	2.78	2.00	1.51	.023
People who are doing well	2	103	3.20	3.00	1.37	
04	1	103	3.25	3.00	1.48	.024
People who are influential	2	103	3.70	4.00	1.38	
05	1	103	2.77	3.00	1.48	.002
People who share stories	2	103	3.35	4.00	1.37	

Notes. 1 - low loneliness, 2 - high loneliness

On a more general level, the study explored whether there is a link between attitudes towards social networking sites and loneliness. The correlation of the attitude components (negative evaluation, positive evaluation, keeping distance) to emotional loneliness (romantic and family relationships), social loneliness and to loneliness in general is recorded in Table 7.

Table 7 Correlation of social networking attitudes with measures of loneliness (n=206)

		Romantic		Family		Social		Loneliness	
Negative	Pearson's r	.241	***	.336	***	.421	***	.441	***
Positive	Pearson's r	.166	*	.205	**	.116		.207	**
Distance	Pearson's r	-.004		.036		-.156	*	-.070	
Attitude	Pearson's r	.219	**	.300	***	.267	***	.340	***

There was a positive correlation found between the negative and positive components of attitude and loneliness. Thus, higher levels of loneliness are associated with a greater emphasis on the role of social networks. Moreover, the negative component is more strongly related to loneliness with the correlations moderate and significant at $p < .001$. The positive component correlated more weakly ($r = .2$ or less). Significance was found for loneliness associated with family relationships ($p < .01$), loneliness in romantic relationships ($p < .05$) as well as overall loneliness ($p < .01$). In the case of distance, there is no connection with loneliness with the exception of social loneliness ($p < .05$). The correlation is negative, indicating that those that are less lonely maintain a higher level of distance from social networks.

Discussion

The aim of this study was to analyze the relationship between social networking use and the experience of loneliness in young adulthood. In line with this, three hypotheses were developed about there being a stronger role of social networks in those who experience greater loneliness.

It can be concluded that the highest degree of loneliness is experienced in the area of romantic relationships. This was also the area in which the greatest variability in the data was found although the mean value was still below the midpoint of the scale. This finding was even more true for the other measures of loneliness (family relationships, social loneliness, overall level of loneliness). The greater dispersion of data in romantic relationships may be due to the particular developmental period of the respondents. Indeed, love relationships in young adulthood can be described as dynamic. Özdemir and Tuncay (2008) found that the loneliness of university students varied with respect to having a romantic relationship or not. Those who did not have a romantic relationship were found to be significantly lonelier. This may also have been reflected in the current study although it did not explicitly survey the relationship status of respondents.

In Hypothesis 1, it was hypothesized that there would be a stronger motivation to use social networking sites in those with higher levels of experienced loneliness. The results allow this to be confirmed, with the reasons being given for using social networking sites given more weight by lonelier people. This was specifically related to meeting new people, functioning in the virtual world, playing games and taking part in competitions. The finding that making new contacts and interacting with strangers on social networks is associated with higher levels of loneliness has also been noted by Sum et al. (2008). In addition, the length of time spent on networks and the level of loneliness are not independent. Lonelier people being more connected can be attributed to the greater strength of motives. This is in line with the study conducted by Stepanikova et al. (2010) which found that time spent online is negatively related to an individual's life satisfaction and positively correlated with loneliness. The association between time spent on social networking sites and loneliness has also been supported by Bonsaksen et al. (2023). Hypothesis 2 predicted higher engagement of lonelier individuals in activities conducted on Instagram. However, this did not prove to be the case with no significant differences found in the use of Instagram features or the purpose of sharing posts between those more and less lonely.

Hypothesis 3 expressed the expectation of a positive association between attitudes towards social networking sites and measures of experienced loneliness. Indeed, higher attitudes tended to be a characteristic of people with stronger feelings of loneliness. The attitudinal scale used allowed the negative and positive aspects of social networking use to be differentiated. For both, higher scores were recorded for lonelier people which can be seen as a verification for the hypothesis. It can also be taken as evidence that lonelier people attach more importance to social networks. Similar results were also reported by Erdoğan (2008) in his research.

Although it might be tempting to draw more general conclusions from the results, it is important to point out its limitations. One limitation is the significant imbalance of the sample in terms of the number of men and women with women outnumbering men almost four times. For this reason, the data were not processed with a gender differentiation. Another limitation is the questionnaires used. The Social Networking and Instagram Activities and the Social Networking Attitude Scale were created for the purposes of the research being conducted and thus did not undergo rigorous validation. In general, bias resulting from social desirability must be taken into account when questionnaires are used as a method. A factor that may have influenced the form of the data obtained is the time when the research was conducted. It was done at a time characterized by the Covid-19 pandemic when the emphasis was on limiting face-to-face contacts and strengthening online communication. For this reason, it may be of interest to conduct similar research at present when coronavirus measures are no longer in place. Inspiration comes from a cross-sectional online survey by Bonsaksen et al. (2023) conducted two years after the outbreak of Covid-19.

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The research was conducted in compliance with the ethical standards set by the Declaration of Helsinki (1964) and informed consent was provided to all participants.

Anonymized data and materials have been made publicly available at the osf.io and can be accessed at <https://osf.io/nfrh3/>

The authors did not preregister their analysis plan.

The authors have no conflicts of interest to declare.

CRedit statement

Author 1: Conceptualization, Methodology, Writing – Original Draft, Writing – Review & Editing.

Author 2: Conceptualization, Methodology, Data curation, Writing – Original Draft.

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