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The Rise of Instagram Stories: An Antidote to Loneliness?

By

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Abstract

This paper explores the relationship between Instagram Stories usage and feelings of loneliness, a phenomenon that has surged globally alongside increased platform adoption. Despite the growing adoption and usage of Instagram Stories, its effects on users' well-being are under-researched. Using a mixed-methods approach, this study analyzes data from 134 participants quantitatively and 12 participants qualitatively. Quantitative results, derived from Spearman's correlation, reveal weak associations between loneliness and various Instagram Stories usage patterns: Self-Deprecating Comparison ($r_s = 0.23$, $p < 0.05$), Feelings of Discomfort ($r_s = 0.30$, $p < 0.05$), Anxious Posting ($r_s = 0.22$, $p < 0.05$), Passive Use ($r_s = 0.07$, $p > 0.05$), Loss of Control ($r_s = 0.15$, $p > 0.05$), and Social Approval ($r_s = 0.12$, $p > 0.05$). Qualitative findings indicate a nuanced relationship, with participants experiencing mixed outcomes; while Instagram Stories offered temporary relief, it did not significantly alleviate feelings of loneliness. The study provided an indepth qualitative analysis alongside recommendations for policy-makers and direction for future research.

Keywords: Instagram Stories, social media, content creation, user well being, loneliness, social connectedness.

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My time at LSE has truly been a transformative experience. It has not only challenged and inspired me intellectually but has also expanded my cultural understanding in unexpected ways. Perhaps the most surprising and valuable outcome of this process has been the newfound confidence and courage to pursue my curiosity and ask questions—even those that might seem obvious. For this, I am deeply grateful.

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1. INTRODUCTION

1.1 Background

Since its inception in 2010[1], Instagram has witnessed a swift adoption rate and continuous growth, reaching a record number of over 2.4 billion active users worldwide[2] making it one of the most popular social media platforms. In August 2016[3], Instagram launched Instagram Stories, described by the platform as, "*the place to share what you're into or what you're up to on the fly[4].*"

Instagram Stories (hereafter also referred to as Stories) offer a more relaxed, casual, and temporal way of letting users interact with each other's content (Israfilzade & Babayev, 2020). Stories – which could be in the form of a message, video, picture, or an image, featured with animated effects – are placed in a sequenced order, where one story is automatically followed by another story, whereby the user has the option to go back and forth from one story to the next (Belanche et al., 2019). This feature has garnered massive engagement on the platform and in January 2019, Instagram reported that there were 500 million daily active Instagram Stories users (Statistica, 2022).

On the other hand, the prevalence of loneliness among young people has been on the rise in recent years, surpassing that of other age groups (Achterbergh et al., 2020). This stands in contrast to the greater public awareness of loneliness primarily focused on older populations

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aged 55 and above (Singh & Misra, 2009; Donovan & Blazer, 2020; Schroyen et al., 2023). Scientific research on loneliness in younger adults is still in its early stages, and this issue is further exacerbated by the increasing social pressure to appear connected, especially on social media platforms (Pitman, Mann, & Johnson, 2018).

Features like Instagram Stories promote a narrative of enhanced connectedness. However, there is still much to be understood about the actual quality of connectedness provided by this medium. Given the sustained popularity of Instagram and its Stories feature, my research aims to explore the usage patterns of Stories and their correlation with rising loneliness levels among adults aged 18 to 45. Specifically, this study will investigate whether Stories can mitigate feelings of loneliness through enhanced social connection, as the platform promotes.

Through a mixed-methods approach, involving quantitative data from 134 participants and qualitative insights from 12 participants, this research will provide an in-depth analysis of Instagram Stories' impact on users' well-being. My goal is to gain a comprehensive understanding of the extent and intensity of social connectedness derived from Instagram and whether this mitigates feelings of loneliness.

The findings from this study aim to inform public policy initiatives to better regulate social media use and contribute to the growing body of research on user well-being and social technologies, as well as, inform future design considerations for social media platforms such as Instagram.

The rest of this paper is structured as follows: Section 2 provides contextual background on the rise of Instagram Stories and the global increase in loneliness. Section 3 covers the literature review of theoretical concepts, leading to the research questions and hypotheses. Section 4 outlines the methodology, covering both the quantitative and qualitative analysis. Section 5

presents the results and discusses the findings, their relevance, and limitations. Section 6 concludes the paper.

2. CONTEXTUAL BACKGROUND

2.1 The rise in the use of Instagram Stories

Instagram has continually introduced innovative features to enhance the user's experience in creating and sharing photos and videos. Among these, Instagram Stories stands out as particularly transformative, revolutionizing how users engage with ephemeral content on the platform (Belanche et al., 2019). According to Blagojević (2023), over 500 million users utilize Stories daily, with about 86.6% of these users uploading content and roughly 60% of millennials engaging with Stories. Unlike other social networking sites such as Twitter, Facebook, and TikTok, Instagram Stories, compared to posts, provides a unique avenue for authentic self-expression and self-presentation (Kreling, Meier, & Reinecke, 2022). Iqani and Schroeder (2015) suggest that the process of expressing oneself online is inherently pleasurable and meaningful, which could explain the large number of users willing to participate.

Instagram Stories are displayed at the top of the app, separate from the user's main feed, and use a vertical photo or video format, unlike the square format of regular feed posts. Users can enhance their Stories by adding videos, pictures, and messages, and by using a video editor to create polished content, accessible for 24 hours. Additionally, interactive elements like stickers or face filters can be included, which are not available in standard Instagram posts. Although public likes and comments are absent, viewers can respond to Stories by liking, sharing, and sending private messages via Instagram Direct (Buffer, 2023). Depending on the user's privacy

settings, content is visibly in the following number of ways: (a) visible to the public; (b) strictly visible to the user's followers; (c) visible only to a close circle of friends among the user's followers through the Close Friends feature. Users can also save Stories beyond the 24-hour limit by adding them to a highlight bubble below their profile information referred to as a bio (see Appendix B for images). The Close Friends feature allows users to create a private list of users who can view their content exclusively (Bravo, 2023).

Moon et al. (2016) found evidence in their research to indicate that Instagram users used images to present an idealized version of themselves and to maintain social relationships. These findings align with Harper's (2002) argument that images evoke deeper elements of human consciousness than words, making visual content a quick and efficient way to communicate thoughts and feelings, especially given the declining attention span (Pittman & Reich, 2016). Bakhshi, Shamma, and Gilbert (2014) found that photos with faces were 38% more likely to be liked and 32% more likely to be commented on than content without faces. Their findings suggested that the visual component of images and videos can transcend linguistic and cultural barriers, connecting diverse groups of people on shared commonality, making the process of reaching a global audience easy.

In investigating Instagram use and body dissatisfaction, Pedalino and Camerini (2022) highlighted how users engaged with the different features of Instagram and how these variations had varied effects on body dissatisfaction. Building on this framework, I infer that differences in Stories and Posts present distinct affordances (Gibson, 1979). While users are familiar with the curated nature of Instagram feeds, showcasing idealized posts that are often long-lasting with greater visibility, Instagram Stories offers an ephemeral approach towards both content consumption and creation, which creates an opportunity for spontaneity, authentic self-presentation, and privacy control (Kreling, Meier, & Reinecke, 2022).

To consume content on Stories, users must exert additional effort by tapping on a specific user's Stories icon to view their content. This feature provides users with control over whose content they can consume. Unlike regular posts, where engagement is measured by likes, comments, and cumulative video views, Stories provides users a private list of those who have viewed their content and whether they react to the content posted. With a 24-hour lifespan, Stories creates a sense of urgency (VanDerslice, 2016), encouraging users to view new content indicated by a colourful ring around a user's profile picture before it disappears.

When creating content, Stories allows users to quickly share daily highlights, activities, and thoughts. This feature offers a behind-the-scenes glimpse into users' lives, enhancing the sense of voyeurism (Kir, 2019). Instagram described the vertical format as *"a new feature that lets you share all the moments of your day, not just the ones you want to keep on your profile... you don't have to worry about over posting. Instead, you can share as much as you want throughout the day – with as much creativity as you want."*

This suggests that users are encouraged to upload snippets of their lives, regardless of whether they are ordinary or eventful, without the need for careful planning (McRoberts et al., 2017), alluding to a greater sense of authenticity. Authenticity has been demonstrated to be positively associated with psychological outcomes (Kifer et al., 2013; Sheldon et al., 2012) such as greater self-esteem (Wenzel and Lucas-Thompson, 2012) and mental well-being (Wood et al., 2008; Robinson et al., 2012). In the study done by Bryan et al. (2015), significant interactions emerged between authenticity and loneliness, showing that authenticity mitigated the relationship between higher loneliness and negative health outcomes.

2.2 The growing trend towards loneliness

In November 2023, The Guardian in an article titled, "WHO declares loneliness a global public health concern" reported that loneliness can be as detrimental to health as smoking 15 cigarettes a day. In 2022, 59% of young adults aged 18 to 24 and 54% of adults aged 25 to 34 reported negative effects on well-being due to loneliness (Statista, 2023). Barreto et al. (2022) examined loneliness across cultures, ages, and genders, finding that loneliness increased with individualism, had a more significant impact on men, and, contrary to popular belief, decreased with age.

Furthermore, Yanguas et al., (2018) linked loneliness to numerous chronic psychological health conditions, including heart disease, lung disease, cardiovascular disease, hypertension, atherosclerosis, stroke, metabolic disorders, depression, psychological stress, and anxiety. Substantial evidence suggests that individuals lacking perceived or actual social connections are at increased risk for premature mortality (Holt-Lunstad et al., 2015). The rising levels of loneliness may also reflect increased interest and research in the field, as noted by Zheng et al. (2023), who observed shifts in research trends on loneliness before and during the COVID-19 pandemic.

Loneliness can drive individuals to seek social connections (Cacioppo, Fowler, & Christakis, 2009), with online communication potentially boosting perceived social support and self-esteem while reducing loneliness and depression (Shaw & Gant, 2002). However, other researchers argue that psychological issues like loneliness and depression can lead to increased online communication, which may further isolate individuals offline and decrease social well-being (Kim, LaRose, & Peng, 2009).

Studies by Dumas et al. (2017) found that lonely individuals exhibited slightly weaker motives for seeking attention ('likes') on Instagram, and in another study, they showed more typical behaviour in seeking attention among lonely people. These findings contrast with previous research by Pittman (2015), which suggested that increased content creation and consumption on Instagram was associated with lower levels of loneliness. This discrepancy indicates that the impact of loneliness on Instagram Stories behaviour may be complex. Some lonely individuals might create content on Stories to feel more connected, while others might refrain due to a belief that their content may not engage others.

3. LITERATURE REVIEW OF THEORITICAL CONCEPTS

3.1 The concept of loneliness and social media use

Loneliness can be characterized as an emotional state where an individual feels separated from others, coupled with an indistinct need for social connection. Despite the absence of a universally accepted definition, Bekhet et al. (2008) identified three common assumptions underpinning most definitions: loneliness arises from perceived deficits in one's social environment; it is a subjective experience distinct from social isolation; and the experience is inherently unpleasant and distressing. Notably, loneliness does not always stem from objective social isolation; one can feel lonely in a crowd and feel a sense of connection when alone (Heu et al., 2019).

Bonsaksen et al. (2021) highlighted two facets of loneliness: social loneliness, which refers to having an insufficient number of people in one's social network, and emotional loneliness, which pertains to the lack of intimacy and feelings of attachment within relationships. Their

study further revealed that older people (60 + years) who used social media experienced lower levels of social loneliness, whereas younger people (18–39) who used social media experienced higher levels of emotional loneliness. These findings give credence to Boulianne (2015), suggesting that social media usage affects demographic groups differently.

Studies on loneliness and social media use present mixed results. Some research indicates that social media can help maintain relationships, thereby relieving loneliness and distress (Cauberghe et al., 2021; Nowland et al., 2018; Thomas et al., 2020). Conversely, other studies associate high social media use with poorer mental health (Gao et al., 2020; Geirdal et al., 2021), increased loneliness (Helm et al., 2022), and internet addiction (Chou & Hsiao, 2000; Bai, Lin, & Chen, 2001). Youssef et al. (2020) relays two hypotheses to explain these variations: the displacement hypothesis suggests that time spent online displaces face-to-face interactions, increasing loneliness, while the stimulation hypothesis posits that online engagement enhances friendships and reduces loneliness.

In a two years, post-COVID-19 pandemic study, Bonsaksen et al. (2023) found that individuals using social media to maintain relationships experienced higher loneliness than those using it for other purposes. The authors concluded that while social media fosters some social interaction, it may not meet the connection needs of those using it for relationship maintenance. Lonelier individuals often turn to online platforms for support (Morahan-Martin & Schumacher, 2003), but increased social media use may not provide the desired relief. An experimental study by Hunt et al. (2018) showed that restricting social media use significantly reduced loneliness and depression. It should be noted that loneliness can be experienced as a state, trait, or both, potentially explaining the conflicting results on social media use and loneliness (Maclean et al., 2022).

3.2 The concept of social connectedness and social media use

Social connectedness can be defined as the feelings of belonging and closeness to others, satisfaction with relationships, and perceived support and opportunities for the self-disclosure of personal information (Winstone et al., 2021). Reviewing literature on social connectedness, Bel et al., (2009) assert that it is a short-term experience of belonging and relatedness. At the core of social connectedness is an individual's subjective feeling of belonging, derived from recent interactions and awareness information about other individuals' location, mood, activities, and availability for contact (Hoffman et al., 2023).

Evidence suggests that social media use provides an essential means of maintaining social connectedness when in-person contact is not feasible (Verduyn et al., 2021). However, while social media use might enhance long distance relationships, it risks eroding the quality of face-to-face relationships, for instance a decrease in the amount of time spent socializing with family members due to the increase in screen time (Winstone et al., 2021). Nevertheless, a study by Jensen et al. (2021) found little evidence that digital technology usage displaces offline engagement.

Ahn and Shin (2013) found that individuals use social media primarily to seek connectedness rather than to avoid social isolation, a finding that corroborates Meshi et al. (2015), who argue that social media users are driven by the need to connect with others and manage their reputation. This supports social media platforms' claims of enhancing social connectedness, particularly in maintaining and strengthening established social networks (Pierre Court, 2021).

There is a consensus across various disciplines that social connectedness is a protective resource associated with positive outcomes, such as increased resilience, prevention of physical and mental health issues, and improved subjective well-being and life satisfaction (Saeri et al.,

2018; Hoffman et al., 2023; Wickramaratne et al., 2022; Rustamov et al., 2023). As well as, correlates with lower levels of loneliness (Jose and Lim, 2014).

Burke et al. (2011) categorize social media activities into three types: direct communication (targeted one-on-one interactions), passive consumption (viewing others' content), and broadcasting (posting untargeted content). In exploring the role of Instagram Stories in enhancing social connectedness, I aim to examine how these interactions foster social connectedness between users and their followership. This includes sharing content on Stories, tagging, sharing stories with friends via direct messaging, directly messaging, and responding to messages received via Stories.

3.3 Research objectives and hypothesis

There is little empirical research investigating the extent to which loneliness is related to the use of social media channels outside of Facebook (Jang, Park, & Song, 2016; Jelenchick et al., 2013). While existing literature has predominantly focused on the impact of Instagram on body image (Pedalino & Camerini, 2022), depression (Lup et al., 2015), anxiety (Vannucci et al., 2017), and overall well-being (Faelens et al., 2021), there remains a gap in understanding the connection between the use of Instagram Stories and user loneliness.

To date, to the best of my knowledge, no research has focused on determining the relationship between loneliness and Instagram Stories. As such, my research objective is to identify whether a correlation exists between feelings of loneliness and the use of Instagram Stories, and whether these feelings are mitigated by the social connections formed on the platform. The objective is to provide insights into how Instagram Stories can influence users' well-being.

The findings would be useful in the formation of well-being policies around social media use, targeted at young adults who currently report the highest levels of loneliness. As well as,

contribute to a better understanding of how social media platforms can be leveraged to promote social well-being among users. For this reason, I aim to probe the growing use of Instagram Stories and its relationship with feelings of loneliness by addressing the following research questions:

RQ1: Is there a correlation between feelings of loneliness and the use of Instagram Stories?

RQ2: Are feelings of loneliness mitigated by social connection derived on Instagram Stories?

Based on these research questions, I formulate the following hypotheses:

Hypothesis 1:

There is a correlation between feelings of loneliness and the use of Instagram Stories.

Hypothesis 2:

Feelings of loneliness are mitigated by social connections derived from using Instagram Stories.

To address Hypothesis 1, a quantitative analysis will be employed, while Hypothesis 2 will be explored through a qualitative analysis. The quantitative analysis will provide measurable data to support Hypothesis 1, whereas the qualitative analysis will offer deeper insights into the subjective experiences and contextual factors related to Hypothesis 2.

4. METHODOLOGY

4.1 Research design

To investigate the hypotheses, an online survey was conducted following approval from the London School of Economics Research Ethics Committee. The study was structured in two distinct phases: Phase I focused on the first research question through a correlational research design that assessed the relationship between Instagram Stories usage and feelings of loneliness. Phase II adopted a qualitative methodology, employing semi-structured interviews to explore the extent of social connectedness provided by Stories and its potential to mitigate loneliness. This two-part design allowed for a comprehensive examination of both the quantitative and qualitative aspects of Stories' impact on user well-being.

4.2 Study procedure and sample size calculation

Participants were recruited through a combination of digital and physical mediums, specifically through links shared on social media platforms such as WhatsApp and Instagram, complemented by the use of quick response (QR) codes for in-person engagements. The administration of the survey was facilitated through the Qualtrics platform. The survey collection spanned from May to June 2024, targeting a global demographic of active Instagram users across varying socio-economic backgrounds, ensuring representation from both developed and developing countries. Eligibility for the study was restricted to individuals older than 18 years with an active Instagram account. Demographic data such as age and gender were also collected.

The sample size necessary for achieving adequate power in Spearman correlation analysis was established through a power analysis conducted using G*Power. This analysis set the

significance level at 0.05, with a power of 0.80, and assumed a medium effect size of 0.3, applicable to a two-tailed test (Bujang & Baharum, 2016). This statistical preparation anticipates a sample size requirement identical to that of Pearson's product-moment correlation, calculated to be 84 participants (Faul et al., 2008).

An initial total of 199 participants opted to fill the online survey, out of which 4 participants did not give informed consent to proceed. The sample composition was skewed, with more participants being female (N=121), male (N=58) and non-binary/ third gender (N=4). The final sample size comprised of total of 134 participants who completed the survey. Participants were excluded if they did not complete the survey, and were below the required age of 18 (N=6).

To augment quantitative findings, participants were given the option to engage in follow-up interviews by providing their email addresses on the consent form, with assurances that non-participation in the interviews would not preclude them from completing the survey. The overall study procedure is diagrammatically summarized in the provided figure below, facilitating a visual understanding of the research design and participant flow.

Figure 1

Overview of study procedure
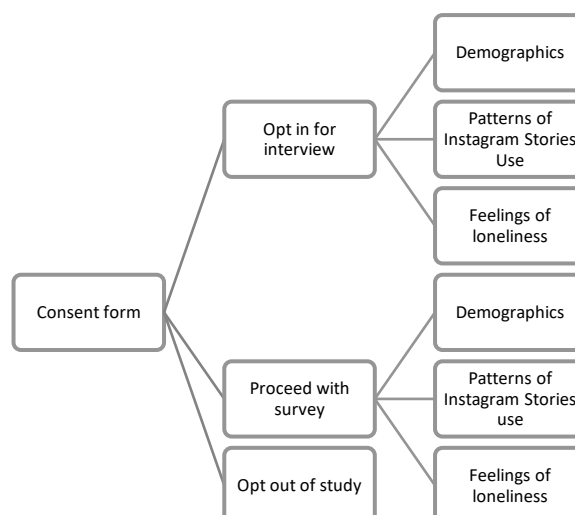
4.3 Measures

Instagram Stories

To explore the behavioural patterns and motivational aspects associated with Instagram Stories, the Instagram Uses and Patterns Questionnaire (IUPQ) was used. This instrument, developed by Saletti et al., (2023), evaluates user activities and emotional responses related to Instagram usage. The IUPQ comprises 37 items formatted on a 5-point Likert scale ranging from 1 (never) to 5 (always). It boasts an overall high Cronbach's Alpha of 0.9, indicating robust internal consistency and test-retest reliability. The scale is segmented into six subscales tailored to assess distinct behavioural patterns: Loss of control (11 items, $\alpha = 0.9$), Anxious posting (5 items, $\alpha = 0.87$), Social approval (6 items, $\alpha = 0.79$), Feelings of discomfort (5 items, $\alpha = 0.74$), Self-deprecating comparison (5 items, $\alpha = 0.87$), and Passive use (4 items, $\alpha = 0.74$). The scale was adapted to measure the use patterns on specifically Stories, for instance, "I feel like I'm on Instagram stories more than I should, and I wish I could control the time I spend on Instagram stories better."

Feelings of loneliness

In assessing the feelings of loneliness among participants, I utilized the UCLA Loneliness Scale, a 20-item instrument developed by Russell, Peplau, & Ferguson (1978). This scale is intended to gauge subjective experiences of loneliness and social isolation. For example, items such as "I am unhappy doing so many things alone" and "It is difficult for me to make friends" prompt respondents to reflect on their personal feelings of solitude. Each item on the scale is rated on a four-point Likert scale, ranging from 0 (I never feel this way) to 3 (I often feel this way). The scale demonstrated excellent internal consistency in this study, evidenced by a Cronbach's alpha of 0.95.

5. Quantitative Analysis

5.1 Statistical analysis

Spearman correlation analysis, which does not require normally distributed data and suitable for ordinal data, is employed in this study to evaluate monotonic relationships—those that consistently increase or decrease. This non-parametric method is particularly robust against outliers and is suitable for assessing the strength and direction of relationships between variables (Akoglu, 2018), such as the usage patterns of Instagram Stories and feelings of loneliness. For interpreting the correlation coefficient results, I adhere to Evans' (1996) classifications of magnitude.

In preparing the data for analysis, all variables with missing data were excluded, and the scales were summed for each subscale related to Instagram Stories usage, and for the loneliness scale for each participant. According to Sullivan & Artino (2013), a high Cronbach's alpha across all scales and subscales validates the internal consistency and confirms that the components are sufficiently intercorrelated, suggesting that the grouped items can adequately measure the underlying variable.

5.2 Spearman correlation coefficients

The following analysis present the Spearman correlation coefficients, examining the relationship between loneliness (UCLA_total) as the dependent variable and various independent variables including gender[5], age[6], anxious posting, feelings of discomfort, social approval, self-deprecating comparison, passive use, and loss of control.

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[5] I encoded gender, where female is represented as 1, male as 2, and non-binary as 3, to measure any differences in gender and age in association with feelings of loneliness.
[6] Age was encoded as 18-24 = 1, 25-34 = 2, 35-44 =3.

These psychological descriptors are provided based on the framework established by Saletti et al. (2023).

Gender and age

There is a very weak negative correlation between loneliness and gender (r_S = - 0.03, p =.70), implying that gender does not significantly influence feelings of loneliness. Additionally, there is a very weak negative correlation between loneliness and age (r_S = - 0.12, p =.20), indicating that older individuals may report slightly lower levels of loneliness, the relationship is not statistically significant.

Anxious Posting (r_S = 0.22, p =.01)

There is a weak positive correlation between loneliness and anxious posting, suggesting that individuals who report higher levels of anxiety about being judged on the platform also tend to experience higher levels of loneliness. This correlation is statistically significant.

Social Approval (r_S = 0.12, p =.17)

There is a very weak positive correlation between loneliness and seeking social approval. This suggests that users who exhibit the behaviour of editing and crafting posts on Instagram Stories and the positive feelings that participants experience when they receive reactions, comments, and likes approval on Instagram Stories tend to report slightly higher levels of loneliness. However, this relationship is not statistically significant.

Feelings of Discomfort (r_S = 0.30, p =.00)

There is a weak positive correlation between loneliness and feelings of discomfort. This indicates that users who experience consequences of being on Instagram stories that reflect

disappointment, suffering, disconnection, and discomfort also tend to feel lonelier. This correlation is statistically significant.

Self-Deprecating comparison (r_S = 0.23, p =.01)

There is a weak positive correlation between loneliness and self-deprecating comments. This indicates that users who convey the feeling of discomfort experienced when users compare their lives to others on Stories, tend to feel lonelier. This correlation is statistically significant.

Passive Use (r_S = 0.07, p =.46)

There is a very weak positive correlation between loneliness and passive use of social media. This indicates a slight association between users who check stories passively, without posting, reacting, liking or commenting themselves and feelings of loneliness. This relationship is not statistically significant.

Loss of control (r_S = 0.15, p =.10)

There is a very weak positive correlation between loneliness and loss of control. This suggests that individuals who feel they have less control over how much time they spend on Instagram stories, wishing that the time spent on Stories was better controlled, may experience higher feelings of loneliness. This relationship is approaching statistical significance but does not meet the conventional threshold ($p < 0.05$).

5.3 Pearson Correlation Test

To validate the robustness of our findings and compare the coefficients to see if the correlated relationships hold under different assumptions, I employed the Pearson correlation matrix. This

matrix assumes both variables are normally distributed, and the observed values are subject to natural random variation (Schober, Boer, & Schwarte, 2018). By examining the association between loneliness (measured by the UCLA_total) and various other variables, we can assess the consistency and strength of these relationships under the assumption of normality. Table 1 below show analysis:

Table 1: Pairwise correlations coefficients

Variables	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
(1) UCLA_total	1.000								
(2) gender_encoded	-0.057	1.000							
	(0.513)								
(3) age_encoded	-0.040	0.196	1.000						
	(0.641)	(0.023)							
(4) Anxious_total	0.203	-0.255	-0.145	1.000					
	(0.018)	(0.003)	(0.093)						
(5) socialapproval~l	0.089	-0.194	-0.316	0.371	1.000				
	(0.303)	(0.025)	(0.000)	(0.000)					
(6) feelingsofdis_~l	0.216	-0.106	-0.320	0.459	0.497	1.000			
	(0.012)	(0.221)	(0.000)	(0.000)	(0.000)				
(7) selfdep_total	0.283	-0.096	-0.107	0.316	0.203	0.439	1.000		
	(0.001)	(0.269)	(0.213)	(0.000)	(0.018)	(0.000)			
(8) passiveuse_total	0.064	-0.123	0.002	0.275	0.105	0.140	0.139	1.000	
	(0.459)	(0.156)	(0.983)	(0.001)	(0.224)	(0.104)	(0.107)		
(9) Loss_of_contro~l	0.154	-0.089	-0.064	0.368	0.290	0.366	0.443	0.072	1.000
	(0.073)	(0.308)	(0.458)	(0.000)	(0.001)	(0.000)	(0.000)	(0.407)	

**Correlation is significant at the 0.05 level (2-tailed).

Weak Positive Correlations

Loneliness exhibits weak positive correlations with anxious posting, feelings of discomfort, and self-deprecating comparison. These correlations are statistically significant.

Very Weak Positive Correlations

Loneliness demonstrates very weak positive correlations with social approval, passive use, and loss of control. These correlations are not statistically significant.

Very Weak Negative Correlations

Loneliness shows very weak negative correlations with gender and age. These correlations are not statistically significant.

Table 2 below presents a comparison between Spearman's and Pearson's correlation coefficients, revealing minor differences but largely consistent findings.

Table 2: Comparison between Spearman's Correlation Coefficients and Pearson's Correlation Coefficients

Variable	Spearman's Correlation Coefficients	Pearson's Correlation Coefficients
Gender (encoded)	-0.030	-0.057
Age (encoded)	-0.120	-0.040
Anxious posting	0.218	0.203
Social approval	0.118	0.089
Feelings of discomfort	0.297	0.216
Self-deprecating comparison	0.225	0.283
Passive use total	0.065	0.064
Loss of control	0.145	0.155

6. Qualitative Analysis

6.1 Participants

Participants were recruited from the survey (see figure 1), with 36 individuals expressing interest in being interviewed by providing their email addresses. All interested participants were contacted via email with scheduling options, and only those who responded to confirm interview dates and times proceeded to the next step. The eligibility criteria included having an active Instagram profile and being over 18 years old.

Semi-structured interviews were chosen as the most suitable qualitative methodology to obtain detailed information and contextual evidence, aimed at understanding the underlying beliefs, values, experiences, and constructions associated with using Instagram Stories (Ruslin et al., 2022). The interviews were conducted digitally via Zoom during the first week of June 2024, using audio-only to maintain facial anonymity. Each interview lasted between 15 and 20 minutes, with an average duration of 17 minutes. Verbal informed consent was obtained at the beginning of each interview, and participants were informed that the interviews would be recorded for transcription purposes.

The interviews were guided by a set of questions adapted from the survey used in the study "Social Connectedness: Concept and Measurement" by Bel et al. (2009). The questions included 17 open-ended items categorized into: (a) knowing the experiences of others, (b) social contact quantity and quality, (c) relationship salience, (d) shared understanding, and (e) dealing with feelings of loneliness through Instagram Stories use. These categories facilitated detailed elaboration, minimized interview bias, and aligned with the research aims.

Examples of the questions included: "Are you often aware of your relationship with people in your social network?" and "How would you say Instagram Stories help you with dealing with

feelings of loneliness?" The complete interview schedule is provided in Appendix C. After conducting 12 interviews, data saturation was deemed to have been reached, indicating that additional interviews would provide minimal new information.

6.2 Data Analysis

Thematic analysis was implemented due to its flexibility in identifying, analyzing, and interpreting patterns within qualitative data (Attride-Stirling, 2001; Braun & Clarke, 2006). Prior studies have utilized qualitative approaches to investigate the psychological mechanisms and processes underlying social media behaviour (Samari et al., 2022) and to explore experiences and perspectives of loneliness among emerging adults (Kirwan et al., 2023).

Braun and Clarke (2006) describe thematic analysis as either an inductive (bottom-up) or deductive (top-down) process. An inductive approach means that the themes identified are strongly linked to the data themselves and not driven by the researcher's theoretical interests, thus being data-driven. In contrast, a deductive thematic analysis tends to be driven by the researcher's theoretical or analytic interest in the area, resulting in a more detailed analysis of specific aspects of the data, rather than a rich description of the data overall.

I primarily employed an inductive thematic analysis using a set of pre-established questions, where participants were often asked to elaborate on their responses, frequently citing examples. The analysis was driven by the primary research question:

RQ2: Are feelings of loneliness mitigated by social connection derived from Instagram Stories?

All interviews were audio-recorded and transcribed (Bird, 2005). Thematic analysis, guided by Attride-Stirling (2001), was conducted on the transcriptions. Key data features were converted into thematic codes as described by Nowell et al. (2017). Subsequently, the data were examined

to identify dominant themes, following Braun et al. (2019). Initial codes were clustered based on emerging themes, with irrelevant codes excluded from the analysis. The coding process was performed manually, and transcripts were reviewed multiple times to ensure accurate coding. Themes were then established by categorizing codes according to their similarities.

In analyzing the data, I followed Braun and Clarke's (2006) six-phase guide: become familiar with the data, generate initial codes, search for themes, review themes, define themes, and write up. Codes were organized into broader themes, utilizing a semantic approach in analyzing the themes, which focused on the explicit or surface meanings of the data rather than looking beyond what participants articulated. This was followed by a discourse analysis in the discussion section, where broader assumptions and potential meanings underpinning the data were explored.

6.3 Results

A total of 12 participants (8 women and 4 men) were interviewed, and the data analysis followed an iterative process. The initial thematic framework was constructed by iterating between the steps of data familiarisation and code identification to develop a robust thematic structure. This approach ensured that the identified themes were closely aligned with the research question, incorporating some predetermined framework categories from the interview schedule. Four themes in total were identified. (See Appendix C for the Codes Identified)

Theme 1: Perception of Others

This theme is defined by how participants described their thoughts and feelings about other users on the platform, including opinions, shared interests, and content. Participants elaborated on the conclusions they drew from observing the lives of other users on the platform, expressing varied perspectives regarding their ability to comprehend the thoughts and emotions

of individuals within their social network. Some participants believed that although they could not fully infer others' thoughts and feelings based on the content shared, there was a deliberate attempt to project a happy life, which they perceived as a façade and only a partial representation of reality.

"*I always feel that they want me to think that they are happy and things are going great, like going on vacay, having a great time with friends and family… but I don't know what they are thinking about. I only know what they are showing me… I've never seen a heartbroken story from my network yet, it's more like they get married, they get engaged, they go there, they go here. It's almost like they feel happy every time*." P3 (F)

Conversely, some interviewees were undecided and exhibited a slight disinterest in understanding how others presented themselves online. There was a recurrent sentiment among these participants that users only shared specific highlights of their lives.

"*I believe everyone has their own opinions and ideologies about life, so you can never at any given time know what they are really thinking about. They only post part of their lives, which they want people to see.*" P4 (M)

Others highlighted their ability to relate to users, particularly those who appeared to share similar interests and struggles. This perceived connection was often between participants and content creators, whom they did not know personally but with whom they felt a sense of connection.

"I'm a tall girl so a few numbers of people I follow are also tall as I am. Some of them share like their tall struggles and where you could buy like trousers from. Sometimes, there is a particular girl, her name is Olivia Laura, she is British, she shares tall concerns which I resonate with, so whenever she posts I tend to view her stories because I know something insightful is going to come from it. Whenever she posts, I feel like I know what she's thinking because I'm in the same boat as her. Not everyone but few of them." P6 (F)

Others asserted that they could infer some of the users' posts because they had a close relationship with these users, often understanding what these individuals portrayed online. *"Oh yes, most of them I have a deep relationship with them. When they post, I can understand where their head is at. I sort of know what they feel, for a lot of them I can interpret some of their post."* P5 (M)

Some participants expressed concerns about how they were perceived by others on Stories, particularly after making posts.

"One feeling that I have quite often is that I regret what I post and I'm always like, I'm gonna delete it. I feel ashamed sometimes because I'm like who cares about that? Or people would find me a very annoying person. I'm afraid of people finding me annoying online because it's the same feeling I have online… and I'm like this person is so annoying. So, when I post, I think that people are thinking that about me and it leaves me feeling anxious being online, feeling exposed and being judged in silence." P11 (F)

Overall, there was a consensus that Instagram Stories users tended to showcase selective aspects of their lives, often portraying a curated and frequently inauthentic version of

themselves. This selective presentation highlighted a superficial display of happiness. Consequently, most participants revealed that they could not accurately discern how other users on the platform truly felt or thought.

Theme 2: Relationship maintiantenance

This theme is defined by how participants maintained their relationships within their social network. There was a clear distinction between relationships that existed outside of the platform and were strengthened by it, and those that were fostered solely on the platform. This distinction reveals how participants viewed building social connections on Stories, with some preferring to maintain online relationships primarily with people they knew offline.

"It's a small network. Most of my followers are my close friends. I hardly want to connect with people I don't know like that." P5 (M)

Others alluded to the difference between their offline and online relationships, 'as people they know in real life' and revealed a sense of disconnection from individuals with whom they did not have a personal offline relationship with.

"Based on how I use social network, it depends. For people I know in real life, it's just a continuation of our communication. But for people I don't really know in person, I'm disconnected from them. We don't know each other that much unless for what we see online." P4 (M)

Some participants reported experiencing predominantly superficial connections lacking depth.

"It feels a little bit superficial because it's not a real friendship, nothing is really there… *there is no real conversation happening. It's just like photos, commenting, scrolling, sharing memes." P3 (F)*

Others highlighted cultivating one-sided, parasocial relationships where the other user was unaware of their existence.

"I feel like sometimes I have a stronger relationship with people that don't even know I exist. There are some people that once I go on social media, I search their stories, even if it means searching their names but we are not friends friends like that." P9 (F)

Other participants commented on the practice of sharing memes as a way of staying connected online with loved ones, particularly in long-distance relationships. For some users, sharing content, including tagging on Stories, was also used as a measure of the closeness of their relationships.

"It helps to exchange content with those that are close to me. I really enjoy spending the day exchanging memes with my friends and cute content saying that I love them or miss them, and this helps maintain my long-distance friendships." P11 (F).

"There are a group of people who send me content, who are like, "I think you'd find this interesting; I think you'd find this funny." And there's a second group who would, this is not the right phrase, but they'd call me out on their stories and be like, I've been watching this after you said it was good and oh it's not or it is. Shoutouts like these, and sometimes these group of people overlap, sometimes they don't. It shows that someone is thinking of you while viewing a specific type of information." P12 (M)

A few participants recognized that social relationships on Instagram Stories served supplementary functions, indicating the usefulness of establishing physical relationships.

"I won't solely rely on social relationships on Instagram. It's very much like a supplement. With the people I interact with, it's difficult to build a relationship off Instagram, I feel. There has to be a physical interaction that goes with it." P8 (F)

The strength and quality of relationships formed through Instagram Stories varied among participants. However, there was a consensus that the platform facilitated ease of communication, especially for maintaining offline relationships. Participants also reported experiencing a lack of connection and, at times, limited engagement with users they did not know personally.

"Even though I have a certain number of followers, I don't think I engage with upto 10% of that number." P12 (M)

Theme 3: Seeking connections

This theme is characterized by participants' descriptions of how they utilized Instagram Stories to connect with other users across various dimensions, which will be discussed in detail below. Several participants acknowledged the value of Stories in facilitating connections with others through shared interests, similar circumstances, opinions, and values. These connections could involve both preexisting relationships and interactions with content creators. Instagram Stories were recognized as a source of information and a means to engage on specific interests.

"I follow specific curators who offer me something valuable for that moment. It's usually lifestyle, health, workout." P1 (F)

While some participants preferred to maintain close ties with individuals who shared similar views, others valued the diversity offered by their followership.

"A lot of the content I interact with and the people I follow, a lot of the time, are people who are similar to me or have similar views.... I maintain it to reinforce ideas or beliefs I have or things that I'm interested in. I believe these people are on the same wavelength as me. Not to say that these people are exactly the same. There would be differences but generally speaking, they are." P8 (F)

"I guess it also speaks to the joy of diversity. We do different things, we like different things, and we regard things differently." P2 (M)

For some participants, Stories served as a medium to engage with ongoing national and global issues, which often provided a sense of community.

"I follow a lot of people around politically sensitive subjects, so I have a sense of commonality with them… In some instances, like the Palestinian issue, where we express our solidarity as a community." P3 (F)

Although the majority of participants were neutral about whether their views and perspectives were shared by their social circles, they noted experiencing difficulty in forming new friendships on the platform.

"Sometimes I've tried starting new relationships and there's this lack of depth where it seems like everyone is performing and there's this expectation that if I say this, you say this, if I like your stories, I want to talk to you. And all these obligations are quite tiring, and I rather not go through that." P12 (M)

Other participants elaborated on the difficulty of building relationships, even when using the Close Friends feature on Instagram Stories, which allows users to create a smaller subgroup for more personal interactions.

"The close friends group is supposed to be more intimate like the VIP. I remember in the beginning I'd would add the people that I wanted to be friends within my group so that it signals my interest in starting a friendship and I thought that was cool, but it turns out, it's not very efficient because they can be there and it's still not like a friendship, friendship because there is no bond." P11 (F)

Despite this, the need to connect beyond shared interests persisted. Some participants used Instagram Stories as a means of seeking attention and initiating conversations, either by posting stories to solicit engagement or by reacting to others' stories to initiate connection.

"I have made posts just to get rid of my extreme loneliness and I have even replied to posts just to initiate conversations with them just because I wanted to talk to somebody… I think people put stories, sometimes just to say, I am here, just see me, I am still here. They don't know how to express their loneliness, so they keep on posting and posting stories after stories." P3 (F)

Some participants did not seek or anticipate forming close bonds through Stories. Instead, they believed that the primary focus of Instagram Stories was to generate views and likes rather than fostering genuine connections. However, they acknowledged that Stories shared with a Close Friends group could be more personal and relevant to specific conversations.

"I just think stories are more for the views and the likes unless you do a close friends' stories. If it's something like I'm sharing with these specific people because we had a conversation about this, but if it's general for public or for all for your followers, it's more about who saw it and who liked it and oh why did this person see it and not like it. So, I don't think it's a good way of connecting." P10 (F)

The expectation attached to the Close Friends feature on Instagram Stories bothered some participants, as it created a perceived obligation to develop relationships that did not naturally exist.

"There's an announcement flare to Instagram stories that I like, it's like, I'm available but then you can't exactly sieve who comes in. It's almost like an invitation for people to engage, which I'm sure is why the close friends setting exists but that in itself is problematic because 'close friends' is such a weighty phrase. What if we are just acquaintances and I like your content and I wanna add you to my small group to see mine? But there's this 'close friends' tag that suddenly implies that you're more than what you're. I've seen people add me to their close friends' group and I think, but I'm not close to you, not in that way, or not in the way you're thinking about it. So no, I don't see it as a way of engaging contact, sometimes it gets too much." P12 (M)

A few participants who identified as introverts did not see a need to seek additional connections on the platform.

"I'd call myself introverted so I tend not to be too keen on social relationships. If I have just two friends, I'm okay with that. I'm not bothered with the whole social relationships and connecting socially with people." P6 (F)

Theme 4: Temporary relief

This theme is characterized by participants' descriptions of the satisfaction they derived from using Instagram Stories, especially in addressing feelings of loneliness. Some participants intentionally used Stories as a source of distraction and as a means of seeking a sense of belonging.

"I think Stories are a nice distraction. Like if it's not a conscious feeling of loneliness, I use Instagram stories to fill that downtime and to interact with people and connect with people via stories to see what they are doing even if they don't know who I am. I guess just looking at that makes me feel like a part of that community." P8 (F)

Conversely, others primarily used the platform for comic relief as a way to cope with feelings of being down.

"Most times when I get bored, I go to Instagram stories because some of them post things that are really funny. They post short clips, so it helps whenever I'm done sometimes." P6 (F)

Others noted the platform's inability to help alleviate their feelings of loneliness.

"You finish scrolling through the stories and the loneliness is still there. It's like a person who drinks alcohol to manage their problems and when the bottle is empty, your problems aren't exactly transported off planet, there are still there waiting for you." P12 (M)

There was an acknowledgement of the substitution effect associated with using the platform as a distraction, suggesting a trade-off between spending time online and offline.

"Spending time on Instagram reduces the time I get to physically spend with people. Though social media distracts you, it doesn't remove the fact that you get lonely from it." P1 (F)

Overall, there was a general consensus that spending time on Stories helped fill a void. The extent to which Stories addressed this void varied among participants: some remained neutral, others experienced a degree of satisfaction, and some reported distress related to the amount of time spent on the platform and its impact on their well-being.

"I don't have any satisfaction because there's nothing going on there. I scroll on Instagram to kill time or to escape from some reality. I feel it's more of a distraction for me. My real life is not so colourful, so I scroll and scroll to stay away from my real life." P3 (F)

"It sometimes passes the time but to make me feel like a part of something, then no." P10 (F)

Added to this, one participant mentioned using Stories to get a sense of others' well-being without feeling the need to engage directly.

"I find Instagram stories are entertaining for sure, like let your mind wander. And oh, what is this person doing? It has its place, and I think sometimes I forget it, oh most people have come to realize that they need to put their best foot forward and maybe on a bad day, you see these

people vacationing in Paris and I'm thinking, won't that be nice. For me, it's that and I like the distraction of social media to pass the time and laugh and pass jokes around... and I see someone's post whom I haven't seen in a while, but I don't check in. I just say, oh you're fine from your stories." P9 (F)

7. DISCUSSIONS

In relation to our research questions concerning the feelings of loneliness and its correlation with the increasing use of Instagram Stories, our analysis reveals a more nuanced understanding of loneliness and its interaction with the use of Instagram Stories. Utilizing a two-tailed test of significance correlation analysis, we found statistically significant but weak positive correlations between Self-Deprecating Comparison ($r_s = 0.21$, $p < 0.05$), Feelings of Discomfort ($r_s = 0.27$, $p < 0.05$), and Anxious Posting ($r_s = 0.25$, $p < 0.05$). Conversely, variables such as Passive Use ($r_s = 0.09$, $p > 0.05$), Loss of Control ($r_s = 0.15$, $p > 0.05$), and Social Approval ($r_s = 0.13$, $p > 0.05$) reported very weak and statistically insignificant correlations. Furthermore, both gender ($r_s = -0.03$, $p > 0.05$) and age ($r_s = -0.11$, $p > 0.05$) demonstrated a very weak negative correlation to feelings of loneliness and were also statistically insignificant. This suggests that although there is a relationship between gender and age with feelings of loneliness, these correlations are not strong enough to have practical implications within the observed sample.

Therefore, for RQ1 (Is there a correlation between feelings of loneliness and the use of Instagram Stories?), we accept our hypothesis that there is a correlation between feelings of loneliness and Instagram Story use. However, the weak correlations suggest that, while there are associations between these psychological variables and feelings of loneliness, other

underlying factors contribute to the presence of loneliness. To explore these factors further, our qualitative analysis provides a more nuanced understanding of the underlying concerns.

Our qualitative analysis indicate that users often perceive others on Instagram as portraying idealized versions of their lives, which can undermine feelings of authenticity and connection. A clear distinction emerges between deep, meaningful relationships and superficial connections on Instagram Stories. While the platform often serves as both a distraction and a source of engagement, providing temporary relief from loneliness, it typically fails to address underlying feelings of loneliness.

There was also evidence that Stories use could exacerbate feelings of loneliness, yet none of the participants considered deactivating their accounts due to these impacts. Personality traits appeared to influence how individuals engaged with Stories; introverted users were generally content with fewer social connections, but no direct evidence suggested that extroverted users fared better with more. Overall, participants agreed that Instagram Stories is not the ideal platform for building close social connections, even with features like Close Friends. In general, participants viewed Stories as a stripped down version of Instagram, useful for maintaining casual contact, connecting with distant relationships, or serving as a form of entertainment.

Thus, for Q2 (Are feelings of loneliness mitigated by social connections derived from Instagram Stories?), we reject our hypothesis that social connections on Instagram Stories mitigate feelings of loneliness. The data indicate that, while some users experience temporary relief from these connections, many perceive them as superficial and insufficient in addressing deeper feelings of loneliness.

7.1 Examining the complex nature of loneliness and social media use

Our results align with previous research on social media use and loneliness, reinforcing the notion that loneliness is a complex phenomenon that shapes how individuals engage with social media (Ryan et al., 2017). Yang's (2016) study found that while Instagram interaction and browsing were associated with lower levels of loneliness, Instagram broadcasting was linked to higher loneliness. This pattern is reflected in our quantitative analysis, where passive use showed a very weak correlation with feelings of loneliness, in contrast to anxious posting, which exhibited a statistically significant correlation with loneliness.

Our data also reveal that some individuals experience temporary relief from loneliness by using Stories to pass the time and find comic relief in the content they viewed and shared. This finding supports the research by Pittman and Reich (2016), which suggested that Instagram pictures might convey more emotional content than Twitter, thereby positively influencing feelings of loneliness.

However, this temporary relief does not address the underlying issues of loneliness, which can worsen the longer individuals spend online. For instance, a study by Wu, Feng, and Zhang (2024) explored the relationship between loneliness and social media usage among Chinese university students through a longitudinal approach. They established a bidirectional causal relationship, showing that as participants increased their social media use, their levels of loneliness gradually rose. A strong predictor of this negative cycle may be the effect of social comparison (Wirtz et al., 2021), which coincides with our findings of a statistically significant correlation between feelings of loneliness and self-deprecating comparison.

These results are particularly concerning when considering that time spent online may substitute time that could be spent forming stronger offline bonds. As explained by Nowland et al. (2018), loneliness has a bidirectional relationship with social internet use. Lower levels of loneliness are associated with social internet use when it stimulates social connections, but when used to escape the offline world, it is associated with higher loneliness.

For participants who used Instagram Stories to strengthen pre-existing bonds, their levels of loneliness seemed alleviated by engaging with close friends on the platform. However, this was only supplementary and typically required additional physical interaction to be truly satisfactory. This observation is parallel with the findings of Schoenfield and Friori (2021), who found that participants who actively and passively interacted with a small group of friends on Instagram (through "Finsta") predicted social loneliness. Conversely, those who used Instagram broadly reported negative associations with social loneliness and positive associations with offline social support from friends.

The evidence from demonstrate that participants reported higher feelings of belonging from friendships involving face-to-face interactions or phone calls. Such interactions have been linked to increased feelings of interconnectedness and reduced loneliness (Twenge et al., 2019), with the platform serving to enhance and maintain this social connectedness. Lambert et al. (2013) found that relationships providing a sense of belonging made life more meaningful and reduced feelings of loneliness, highlighting the importance of creating bonds offline.

However, since this study is correlational, we do not explore the hypothesized causes of loneliness, which would be key to further understanding how social media platforms contribute to overall feelings of loneliness. To address the growing prevalence of loneliness, Pitman et al.

(2018) recommend investing in public awareness initiatives, particularly among younger individuals. They recommend increasing support for mental health services, focusing on early detection of at-risk individuals, and promoting loneliness prevention policies and practices.

7.2 Study limitations and directions for future research

Our dataset was skewed towards female participants, resulting in an imbalance that could potentially affect the generalizability of our findings. Although the correlational analysis indicated minimal differences in the effects of age and gender, it would be beneficial for future research to utilize a more balanced sample to gain a comprehensive understanding of gender differences. Prior research has demonstrated that males and females engage with social media in distinct ways (Heffer et al., 2019; Krasnova et al., 2017; Twenge & Martin, 2020), suggesting that gender may moderate the associations observed in this study. Future studies should explore whether the relationships between Instagram Stories usage and loneliness are consistent across both genders.

Additionally, data used were cross-sectional and based on self-reported measures, which are subject to known biases such as social desirability, lack of introspection, and memory recall. These factors could influence the reliability and temporal stability of our findings.

Future research might also consider adopting the updated version of the UCLA Loneliness Scale. We used the original 20-item version, which is entirely negatively worded (e.g., "There is no one I can turn to," "I am unhappy being so withdrawn"). The UCLA scale was revised in 1980 (Russell et al., 1980) to include a balance of positively and negatively worded items and was further refined by Russell in 1996 to address issues that arose in research with elderly

populations (Weeks & Asher, 2012). The choice of scale could impact the results, and future studies should carefully consider which version to use.

To achieve a broad perspective, I collected data from a wide range of demographics without distinguishing between factors such as country of origin, income status, and other demographic markers. Future research could adopt a more focused approach to explore how specific variables like race or geographic location may influence susceptibility to loneliness related to Instagram Stories use. For instance, studies could investigate how feelings of loneliness associated with Instagram Stories use differ between collectivist and individualist societies.

8. CONCLUSION

This study is correlational in nature, meaning that the findings cannot be used to establish causal relationships. However, the results contribute to our understanding of the relationship between Instagram Stories use and feelings of loneliness, particularly in light of the conflicting reports in existing literature—where some studies suggest that social media use can alleviate loneliness, while others indicate it may exacerbate the issue. Additionally, the thematic analysis sheds light on how preexisting social connections can be strengthened through Instagram Stories, nevertheless, there are indications that Stories do not facilitate the formation of new relationships. As such, social media policies could leverage these insights by clearly positioning social media platforms as supplementary tools for forming connections, thereby helping to reframe users' expectations. This could potentially encourage individuals to prioritize building close, offline relationships, which may be a more effective strategy for combating loneliness and improving wellbeing.

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Appendix A

Table 1: Spearman's rank correlation coefficients

Variables	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
(1) UCLA_total	1.000								
(2) gender_encoded	-0.030	1.000							
(3) age_encoded	-0.120	0.221	1.000						
(4) Anxious_total	0.218	-0.286	-0.185	1.000					
(5) socialapproval~l	0.118	-0.220	-0.359	0.386	1.000				
(6) feelingsofdis_~l	0.297	-0.127	-0.364	0.506	0.524	1.000			
(7) selfdep_total	0.225	-0.170	-0.254	0.383	0.220	0.498	1.000		
(8) passiveuse_total	0.065	-0.105	-0.070	0.250	0.090	0.055	0.167	1.000	
(9) Loss_of_contro~l	0.145	-0.143	-0.122	0.420	0.320	0.390	0.443	0.108	1.000

Spearman rho = 0.108

Table 2: Pearson correlations coefficients

Variables	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
(1) UCLA_total	1.000								
(2) gender_encoded	-0.057	1.000							
	(0.513)								
(3) age_encoded	-0.040	0.196	1.000						
	(0.641)	(0.023)							
(4) Anxious_total	0.203	-0.255	-0.145	1.000					
	(0.018)	(0.003)	(0.093)						
(5) socialapproval~l	0.089	-0.194	-0.316	0.371	1.000				
	(0.303)	(0.025)	(0.000)	(0.000)					
(6) feelingsofdis_~l	0.216	-0.106	-0.320	0.459	0.497	1.000			
	(0.012)	(0.221)	(0.000)	(0.000)	(0.000)				
(7) selfdep_total	0.283	-0.096	-0.107	0.316	0.203	0.439	1.000		
	(0.001)	(0.269)	(0.213)	(0.000)	(0.018)	(0.000)			
(8) passiveuse_total	0.064	-0.123	0.002	0.275	0.105	0.140	0.139	1.000	
	(0.459)	(0.156)	(0.983)	(0.001)	(0.224)	(0.104)	(0.107)		
(9) Loss_of_contro~l	0.154	-0.089	-0.064	0.368	0.290	0.366	0.443	0.072	1.000
	(0.073)	(0.308)	(0.458)	(0.000)	(0.001)	(0.000)	(0.000)	(0.407)	

**Correlation is significant at the 0.05 level (2-tailed).

APPENDIX B

Images showcasing the different types of Stories that can be created and posted on Instagram Stories.
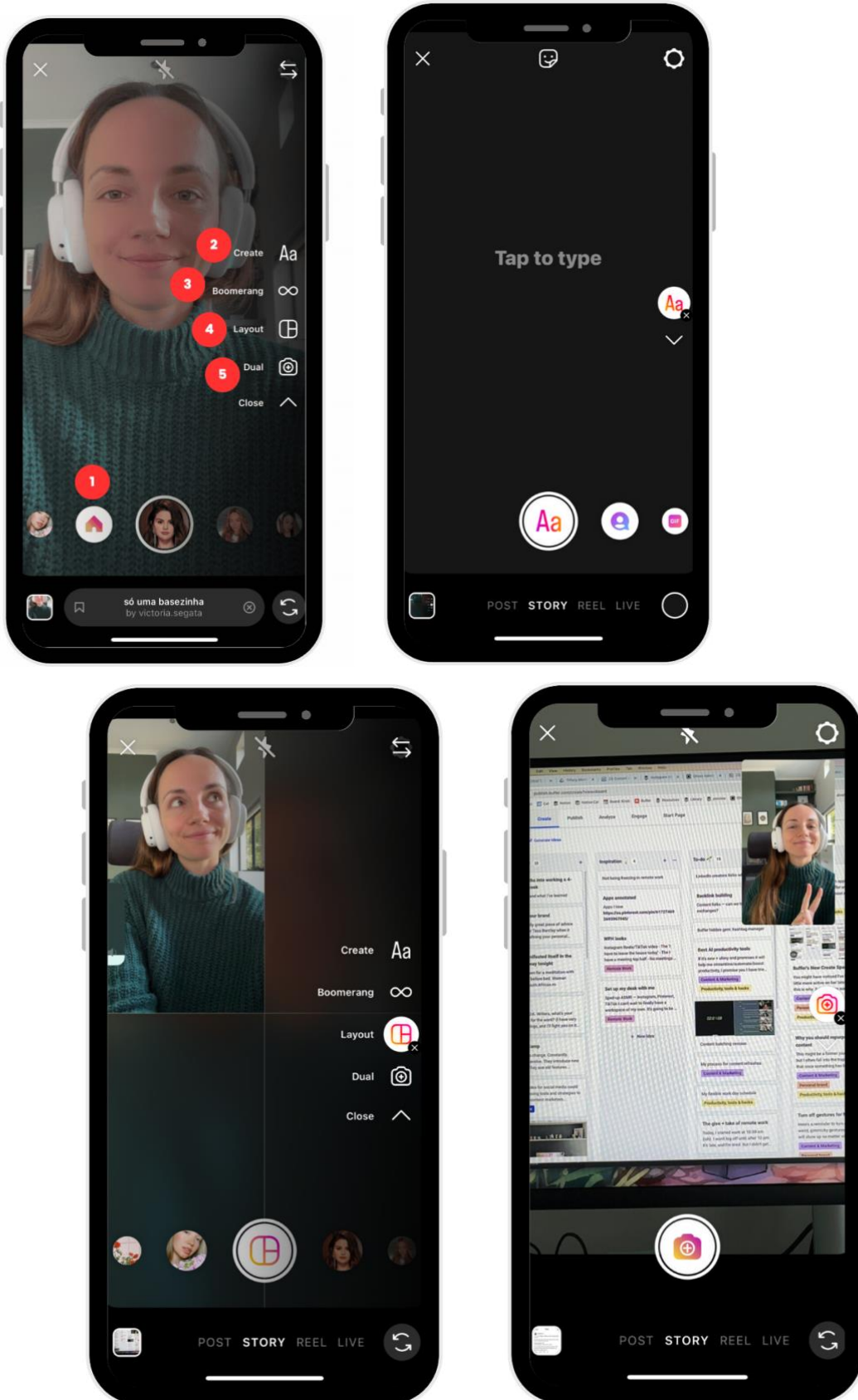
Images displaying the stickers and features available on Instagram Stories, including the vertical format.
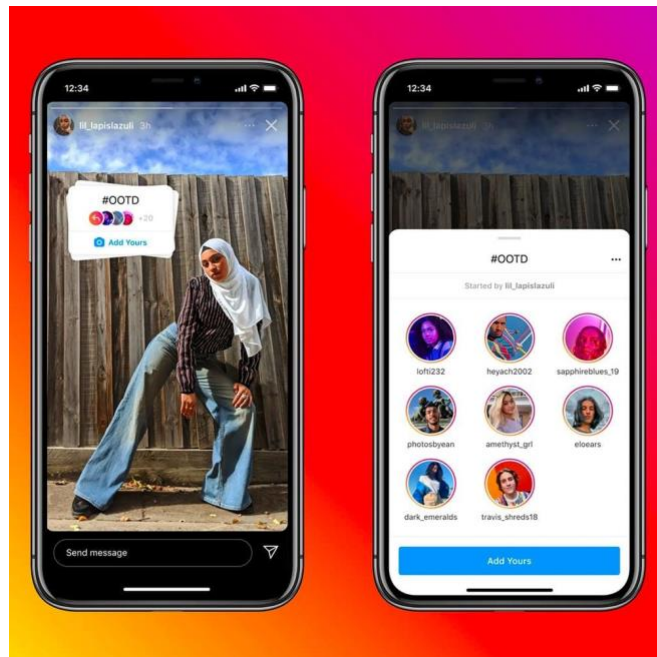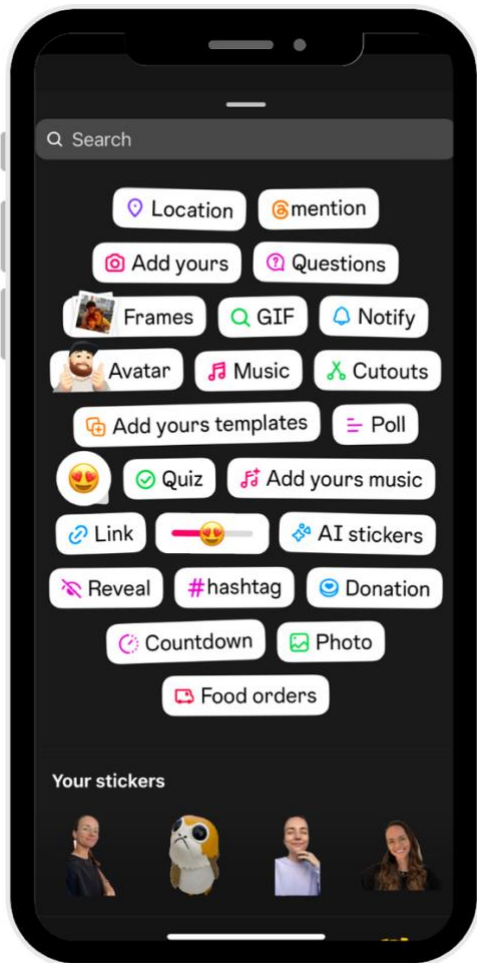
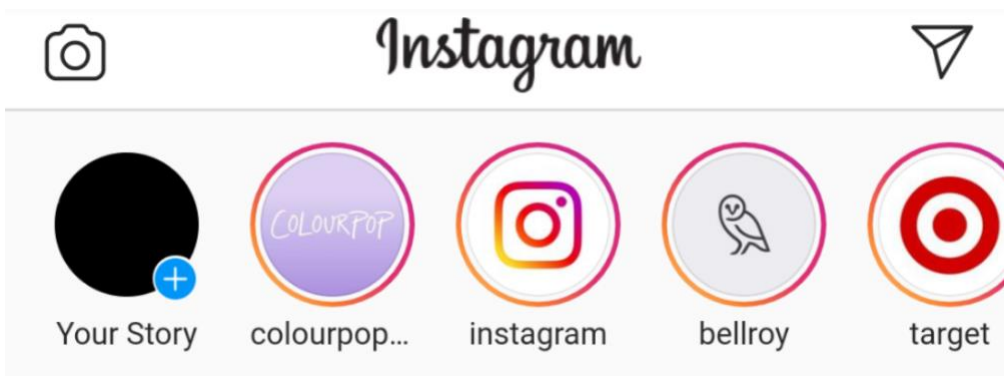(Source: Buffer, 2023)

Image showing highlights encircled.
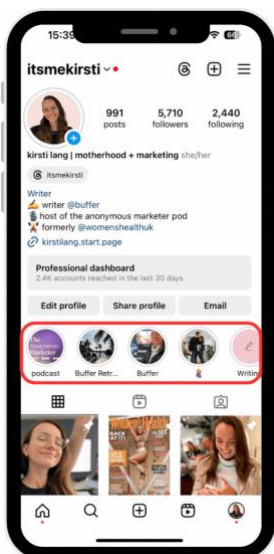
(Source: Buffer. 2023)

Images showing updated Stories uploaded, highlighted in colourful ring around the profile picture.
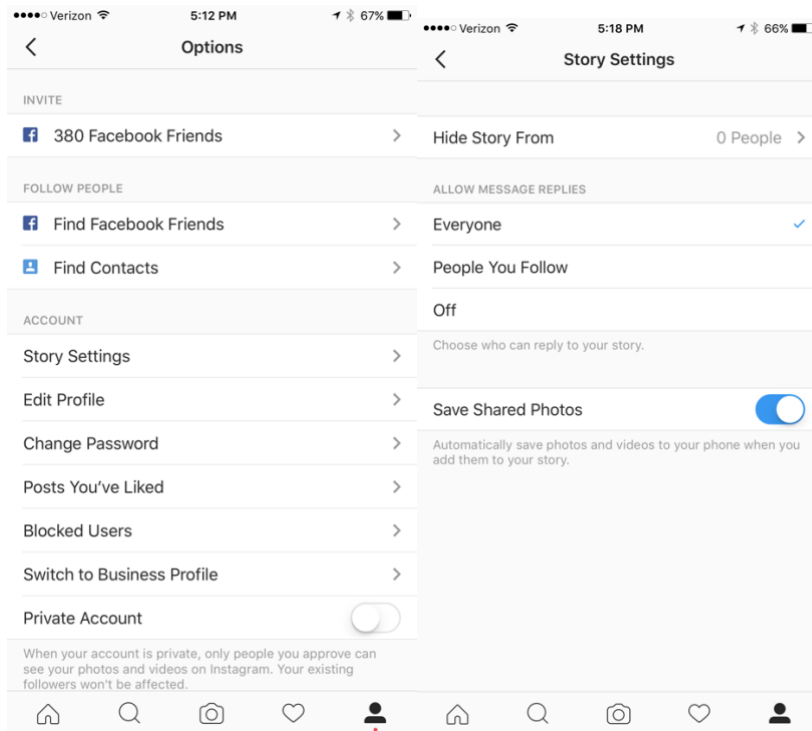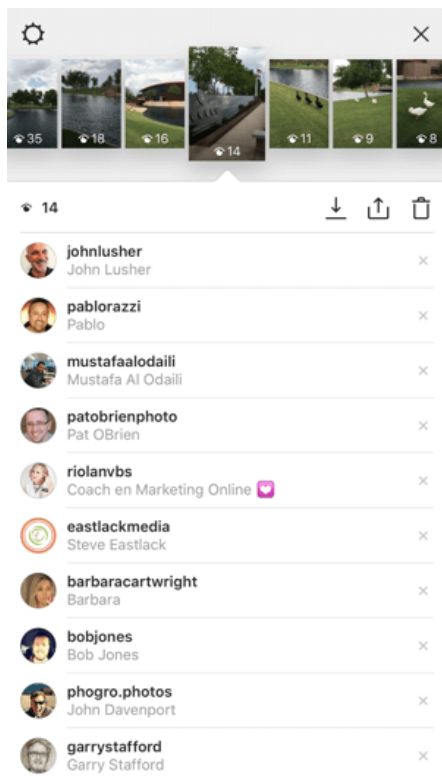

(Source: Vanderslice, 2016)

(Source: Sproutsocial, 2023)

Images showing the privacy settings available when uploading content on Instagram Stories

(Source: Vanderslice, 2016)

Image showing the list of people who have viewed content, available only to the user.

(Source: Vanderslice, 2016)

Images showing the Close Friends' feature on Instagram Stories, how to add users to a Close Friends group and the updated Close Friends Stories, highlighted in a green ring around profile picture.
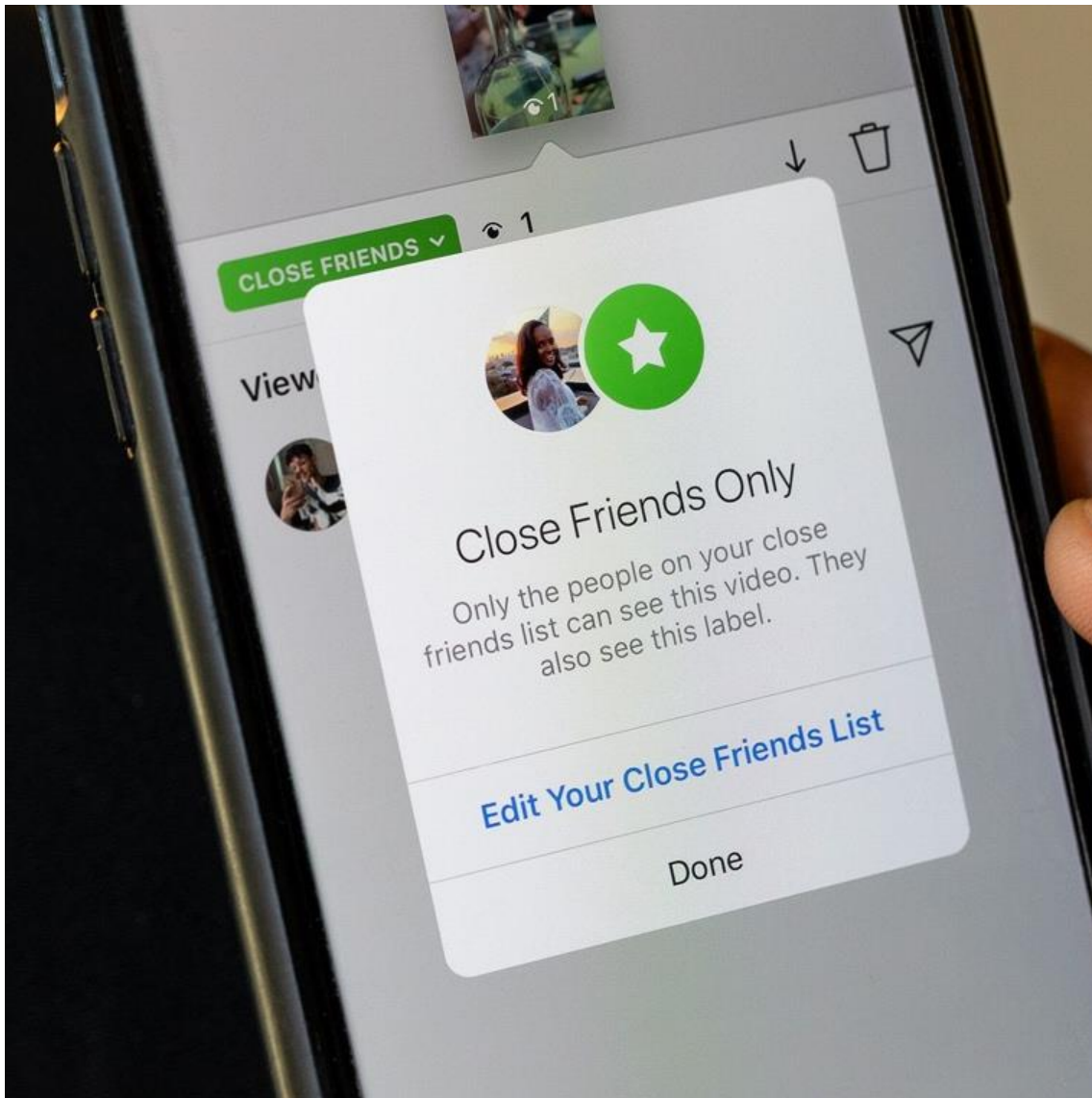
(Source: The Verge, 2019)
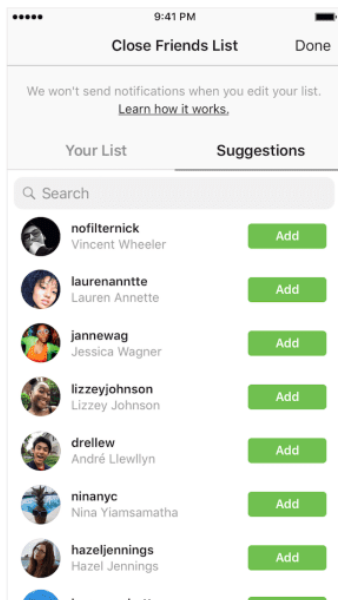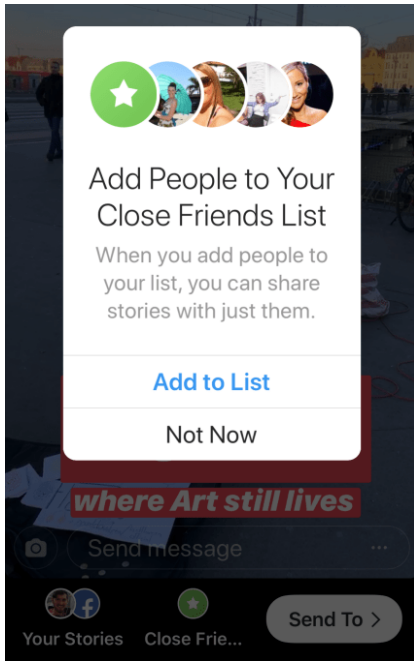
(Source: TechCrunch, 2018)

Source: (BuzzFeed, 2018)

APPENDIX C

Full Experimental Questionnaire including consent form

Thank you for taking the time to participate!

This study is for my master's programme at LSE about the use of Instagram Stories. Please read the following information about the study and details regarding your consent to participate. You must be 18 and above, and currently have an active Instagram account. If you are, please proceed to give your consent.

What is the study about?

We invite you to participant in an online research project about the use of Instagram stories on wellbeing.

What will my involvement be?

You will be asked your age and gender. After this, you will complete a series of questions about your Instagram use and feelings of loneliness. If you would like to partake in an interview, kindly write your email address in the space provided below. If you prefer not to, kindly proceed with the survey.

Do I have to take part?

Participation is voluntary. There are no negative consequences for you if you decide not to take part in this study. If you change your mind about participating while completing the survey, please exit, and your information will not be recorded.

What will my information be used for?

The information from this survey will be used for my master's dissertation. By consenting to participate, your responses will be kept confidential and anonymous, and destroyed at the end of the study.

Will my information be anonymous?

Your participation will be anonymous - your name will not be requested or used in any reports or publications resulting from the study. If you have any questions, please feel free to contact me via email.

Researcher name: *Removed for Anonymity*

Email Address: *Removed for Anonymity*

Kindly provide your email address:

Please click below to confirm your consent to participant in the survey:

○ No, I do not want to take part

○ Yes, I want to take part

Demographics

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What best describes your gender

○ Male

○ Female

○ Non-binary / third gender

○ Prefer not to say

Instagram Uses and Motives Questionnaire (IUPQ)

Loss of control

I feel like I'm on Instagram stories more than I should.
I wish I could control the time I spend on Instagram stories better.
I wish I could spend less time on Instagram stories and more time living the present moment.
I am procrastinating due to hanging out on Instagram stories too much.
While being on Instagram stories, I lose track of time.
I spend time mindlessly scrolling on Instagram stories.
Opening Instagram and checking stories has become like a reflex (something I do automatically).
Instagram stories is an essential part of my daily life.
 I feel a need to enter Instagram stories and see what is happening.
I open Instagram stories many times during the day to see what is new.
I open Instagram stories in between activities automatically.

Anxious Posting

I tend to get anxious after posting something on Instagram stories because I fear people will not like it.
When I post something on Instagram stories, I feel insecure and tense, waiting to see people's reactions.
When I post something on Instagram stories, I am afraid of being judged.
When I share something on Instagram stories, I tend to feel vulnerable and exposed.
I refrain from posting something others may not like.

Passive use

I enjoy checking out content on Instagram stories, but I don't like sharing content myself.
I do not post stuff on Instagram stories, but I watch other people's content.
I would probably watch stories on Instagram without liking or reacting to them.
I check stories, but I hardly react, like or comment them.

Social approval

I get excited when my stories receive likes and reactions.
When I get likes or comments on a story, I feel happy and uplifted.
I edit my videos and pictures so they look good on Instagram stories.
If someone comments or reacts to my stories, I will answer them back.
I put a lot of effort into crafting beautiful posts and stories for my followers.
I feel disappointed when the content I create does not get the reactions I expect.

Feelings of discomfort

My relationships are suffering due to my Instagram addiction.
If I am not on Instagram stories, I feel disconnected from others.
I get annoyed when I can't access Instagram stories for any reason.
I remove a story when they don't get the reaction I expect.
I check other people's stories to feel better about myself.

Self-deprecating comparison

When I see certain posts or stories on Instagram, I feel envious.
Some of the content I see on Instagram stories makes me feel bad about myself.
I can't help but compare myself to others on Instagram stories.
I wish I could have the life of some of the people on Instagram stories.
Being on Instagram gives me mixed feelings.
I believe the bar set by the influencers on Instagram stories is too high for me to achieve.

Scoring: Never (1), Sometimes (2), About half the time (3), Most of the time (4) and Always (5).

Please select the option that best describes you

	Never	Sometimes	About half the time	Most of the time	Always
I feel like I'm on Instagram Stories more than I should.	○	○	○	○	○
I wish I could control the time I spend on Instagram Stories better.	○	○	○	○	○
I wish I could spend less time on Instagram Stories and more time living the present moment.	○	○	○	○	○
I am procrastinating due to hanging out on Instagram Stories too much.	○	○	○	○	○
While being on Instagram Stories, I lose track of time.	○	○	○	○	○
I spend time mindlessly scrolling on Instagram Stories.	○	○	○	○	○
Opening Instagram and checking stories has become like a reflex (something I do automatically).	○	○	○	○	○
Instagram Stories is an essential part	○	○	○	○	○

Sample excerpt from Qualtrics (participants where unaware of the subsections of survey).

UCLA Loneliness Scale:

INSTRUCTIONS: Please select the option that best describes you

O indicates "I often feel this way"
S indicates "I sometimes feel this way"

R indicates "I rarely feel this way"
N indicates "I never feel this way"

1. I am unhappy doing so many things alone
2. I have nobody to talk to
3. I cannot tolerate being so alone
4. I lack companionship
5. I feel as if nobody really understands me
6. I find myself waiting for people to call or write
7. There is no one I can turn to
8. I am no longer close to anyone
9. My interests and ideas are not shared by those around me
10. I feel left out
11. I feel completely alone

12. I am unable to reach out and communicate with those around me
13. My social relationships are superficial
14. I feel starved for company
15. No one really knows me well
16. I feel isolated from others
17. I am unhappy being so withdrawn
18. It is difficult for me to make friends
19. I feel shut out and excluded by others
20. People are around me but not with me

Scoring:

Make all O's =3, all S's =2, all R's =1, and all N's =0.

Please select the option that best describes you

	I often feel this way	I sometimes feel this way	I rarely feel this way	I never feel this way
I am unhappy doing so many things alone.	○	○	○	○
I have nobody to talk to.	○	○	○	○
I cannot tolerate being so alone.	○	○	○	○
I lack companionship.	○	○	○	○
I feel as if nobody really understands me.	○	○	○	○
I find myself waiting for people to call or write.	○	○	○	○
There is no one I can turn to.	○	○	○	○
I am no longer close to anyone.	○	○	○	○
My interests and ideas are not shared by those around me.	○	○	○	○
I feel left out.	○	○	○	○
I feel completely alone.	○	○	○	○
I am unable to reach out and communicate with those around me.	○	○	○	○

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We thank you for your time spent
taking this survey.
Your response has been recorded.

Powered by Qualtrics 🗗

Sample email sent to participants to schedule interviews

Hi,

I hope this email finds you well.
My name is███████████, and I want to thank you for filling out my survey and showing interest in being interviewed about the use of Instagram Stories. I'm reaching out to schedule a 15-minute interview. The available dates are Monday, June 3, and Wednesday, June 5, between 1 pm and 5 pm. Please let me know which date and time is most convenient for you by replying to this email, and I'll share a Zoom link accordingly.

If you would like to schedule an alternative date from the above dates, please reply with your preferred date and time and I'll confirm if it's feasible.
I look forward to speaking with you soon!

Best regards,

Semi-structured interview questions

Instructions:

Verbal consent: This conversation is confidential, and you will be participating anonymously, if midway you decide not to participate, please let me know and everything you have said prior will not discarded and not be used in the study.

I will refer to the people you follow and the people who follow you as your social network. I will refer to the interaction with your social network in the form of likes, shares, comments and messages as your social contact.
Do you consent to proceed?

Questions

1. Knowing the others' experiences

Do you often know what people in your social network think?

Do you often know what people in your social network feel?

Are you often aware of your relationship with people in your social network?

2. Dissatisfaction with contact quantity

Do you feel a lack of contact with people in your social network?

Do you feel a lack of social relationships?

3. Satisfaction with contact quantity

How satisfied are you with the number of people with whom you have social contact?

How satisfied are you with the total amount of time that you have contact with people in your social network?

4. Dissatisfaction with contact quality

Do your relationships with people in your social network feel superficial?

How much satisfaction do you derive from your social contact on Instagram?

5. Relationship salience

Do you often feel "together" with people in your social network somehow?

Do you feel that people in your social network think of you?

Do you often think of people in your social network?

6. Shared understandings

Do you feel you have a lot in common with people in your social network?

Do you feel on the same wavelength with people in your social network?

Do you feel that people in your social network share in your interests and ideas?

Would you say stories are a way of encouraging social connectedness for you?

How would you say Instagram stories help you with dealing with feelings of loneliness?

Table 3: Thematic analysis of semi-structured interviews with sample excerpts

Codes	Themes identified	Excerpts
- Undecided - Following influencers - Fake happiness - Idealized lives - Similar struggles - Fear of judgement - Voyeurism	Perception of others	*I'd say no, this is a very hard question. I think we make a lot of assumptions about how people think and behave but usually you never know people think. I had this experience lately because I thought in my social network on Instagram, I had people who thought like me but once I started posting my opinions online, I realized I was losing social relationships and I stopped posting a lot. This made me realize that maybe you don't know how people think, especially politically. (P11, Female)* *Yeah, kinda of, it's not easy to detect because you know Instagram most people post fake things and live a fake life. Everyone is wanting to show off this happy, rich life and personality but behind the scenes most of them are not. It's a 50-50 thing. I won't exactly say I know how they feel or expect we the viewers to see them as, but it's kinda like a 50-50 thing. (P6, Female)* *If it's a close social circle, maybe. But I feel people choose to post what they want you to see because you might think someone is okay but when you meet them face to face, they are not okay at all. I do think that in my social circle, a lot of people are choosing not to post because they think they don't have anything nice in their lives, so why bother? Like they don't have anything interesting or entertaining to be posting, so, they watch a lot instead of posting. (P11, Female)* *Lately most people seem to be doing trendy stuff on Instagram than share personal stuff. It's more like the social space has written laws on what to post on stories. Very few times do people post things that are unexpected. The times that people share is like, oh I have a fun stuff to share but I don't want to spoil my timeline or my reels and all. I feel it's not a good use of stories. (P5, Male)*
- Ongoing Conversations		*I don't know a lot of people personally on Instagram. They are mostly my classmates whom I haven't talked one on one with but we are followers on Instagram. So, it's mostly acquaintances whom I*

- Supplementary - Ease of communication - Superficial interactions - Close friendships - Sharing memes - Acquaintances - Dissociation - Classmates	Relationship maintenance	*haven't interacted in real life and then a small group of close friends who I talk to, who actually know who I am, what I am going through and what I am doing right now. Otherwise, I connect with people on Instagram just increase the followers sometimes. (P3, Female)* *Depends on who I communicate regularly, by that is who sends me the most memes. That's how we communicate. We don't even say hi, if we want to communicate, we use Instagram. On Instagram, it's like, I saw this and I thought you'd like it. (P1, Female)* *Yea I do. Some of my followers are people from my high school days and we don't talk a lot. Some of them I haven't spoken to in the last five years, and everyone does their own thing. (P6, Female)* *So yesterday, I had a row with an acquaintance, and I use the word acquaintance, I'm sure the person would use a deeper word. She had sent a message by 1am and didn't respond until 10pm the next day. I'm not sure what context this adds but for me it was fine to do that and for her it was jarring, the expectation that comes with exchanging messages there. (P12: M)*
- Lack of engagement - Reaching out - Sense of community - Introversion - Dissatisfaction	Seeking connection	*Yes, I do, I feel that people don't interact with my post. Mainly because I use the close group to post about what's going on in my head and especially to converse with people that I don't talk to on WhatsApp or having some sort of social connection throughout my day but at the same time, I'm not willing to deactivate my account. (P11, Female)* *Of course, I do feel because in real life, I'm introverted, and I don't connect immediately with a lot of people. But on Instagram I have this feeling like I have a lot of people and all that but in reality, I can't talk to them. I feel this disconnect every single day as I'm scrolling on Instagram like I don't really know most of these people on my feed and I'm liking their posts but who are they? I don't connect with*

- Lack of belonging		*like 95% of the people on my Instagram. (P3, Female)*
- Diverse opinions		*I think I'm pretty neutral. Nowadays, I don't think Instagram is not the place to find a sense of belonging especially because I consume content having in mind that people share only what they want to share. So, if I don't know a person, why would I feel a sense of belonging? (P11, Female)*
- Shared interests		
- Similar values		
- Disconnection		*Instagram stories might make me connect with people that I don't know in real life. So, it makes me connected with what's happening in this country or what is this person doing. And maybe if I'm following someone that's doing something education related, and they are posting study tips and all. It keeps me updated on specific fields, or specific news or specific events but with friendships and connections, no. Except if it's not so close friends and the Instagram is our only way of communicating, then Stories might help start a conversation. Otherwise, if it's close friends, I'm going to know what they are going before the story is posted. (P10, Female)*
- Close Friends feature		
		Yea, I think quite a lot of them do. It kinda varies because they all kinda have various niches and interests that I have and the people would post on those niches, and my close friends we all kinda have similar interests and ideas. (P8, Female)
		It's a one-dimensional way. You know how in a conversation; it goes both ways. Instagram stories feel like someone is talking and presenting and we are just here receiving it. (P9, Female)
		Yes, because most people nowadays don't know how to talk, and they don't have people to talk to. They just go and post on their stories and wait for anyone that feels responsible to reach out. Sometimes, I fish when I'm in the mood to be of help, I can just look through and If I see someone in that space, I reach out. I've done that a number of times. (P5, Male)

- Escapism - Loneliness - Distraction - Funny content - Entertaining - Information sharing - Filling the void - Engaging - Satisfaction	Temporary relief	*I'm introverted, I work late and, on the weekends, I'm too exhausted to do anything, that's where social media comes in. Because normally, I use it pass the time and fill the void instead of going out. I rarely have human interactions outside of work. For instance, on Saturday when I'm bored, I can as well go down to my neighbour's house but once I pick up my phone and go down the rabbit hole of Instagram Stories or some other social media app, I get distracted, and time passes for me do other things. (P1, Female)* *Very satisfied. I use the platform as a filler during my in my downtime. For me it's okay, although sometimes if I'm not careful, it might spill into another schedule but most of the time, It's within my sphere of control, so it's never really an issue. (P4, Male)* *To an extent yes, I do like scrolling stories way more than posts. I don't think I look at posts anymore but when I'm on Instagram it's just scrolling through people's stories and especially nowadays, people post so much more on stories. It feels a lot more interactive, and I feel like I'm seeing more of their personal lives rather than what they tailor on their post, cuz you know stories are only there for like 24hours. It's so much more temporary so people have the ability to post whatever they are doing that day. (P8, Female)* *I don't think it has much of an impact on my feelings of loneliness, personally. At most it might be that if someone has replied to something and it starts a conversation. (P7: F)*

Note: 35 codes within 4 themes.

APPENDIX D

Do File

```
** Installing packages **
ssc install gtools
ssc install rddensity
ssc install cmogram
net install lpdensity, from
(https://raw.githubusercontent.com/nppackages/lpdensity/master/stata/) replace
ssc install outreg2
ssc install binscatter
ssc install outreg2
ssc install estout
use reg_panes

/* to clean up the data, we drop rows with more than 20% missing values */

gen nmissing = 0
foreach var of varlist * {
    replace nmissing = nmissing + missing(`var')
}
drop if nmissing > 0.2 * _N
drop nmissing

/* encoding categorical variables */
encode gender, gen(gender_encoded)
encode age, gen(age_encoded)

/* calculate the cronbach alpha scores valriables */
```

alpha lossofcontrol_1 lossofcontrol_2 lossofcontrol_3 lossofcontrol_4 lossofcontrol_5 lossofcontrol_6 lossofcontrol_7 lossofcontrol_8 lossofcontrol_9 lossofcontrol_10 lossofcontrol_11 anxiousposting_1 anxiousposting_2 anxiousposting_3 anxiousposting_4 anxiousposting_5 socialapproval_1 socialapproval_2 socialapproval_3 socialapproval_4 socialapproval_5 socialapproval_6 feelingsofdiscom_1 feelingsofdiscom_2 feelingsofdiscom_3 feelingsofdiscom_4 feelingsofdiscom_5 selfdeprecatingcom_1 selfdeprecatingcom_2 selfdeprecatingcom_3 selfdeprecatingcom_4 selfdeprecatingcom_5 selfdeprecatingcom_6 passiveuse_1 passiveuse_2 passiveuse_3 passiveuse_4

alpha ucla20_1 ucla20_2 ucla20_3 ucla20_4 ucla20_5 ucla20_6 ucla20_7 ucla20_8 ucla20_9 ucla20_10 ucla20_11 ucla20_12 ucla20_13 ucla20_14 ucla20_15 ucla20_16 ucla20_17 ucla20_18 ucla20_19 ucla20_20

alpha anxiousposting_1 anxiousposting_2 anxiousposting_3 anxiousposting_4 anxiousposting_5

alpha socialapproval_1 socialapproval_2 socialapproval_3 socialapproval_4 socialapproval_5 socialapproval_6

alpha feelingsofdiscom_1 feelingsofdiscom_2 feelingsofdiscom_3 feelingsofdiscom_4 feelingsofdiscom_5

alpha selfdeprecatingcom_1 selfdeprecatingcom_2 selfdeprecatingcom_3 selfdeprecatingcom_4 selfdeprecatingcom_5 selfdeprecatingcom_6

alpha passiveuse_1 passiveuse_2 passiveuse_3 passiveuse_4

alpha lossofcontrol_1 lossofcontrol_2 lossofcontrol_3 lossofcontrol_4 lossofcontrol_5 lossofcontrol_6 lossofcontrol_7 lossofcontrol_8 lossofcontrol_9 lossofcontrol_10 lossofcontrol_11

/* create a composite score for the UCLA Loneliness Scale by summing its items */

```
egen UCLA_total = rowtotal(ucla20_1 ucla20_2 ucla20_3 ucla20_4 ucla20_5 ucla20_6
ucla20_7 ucla20_8 ucla20_9 ucla20_10 ucla20_11 ucla20_12 ucla20_13 ucla20_14
ucla20_15 ucla20_16 ucla20_17 ucla20_18 ucla20_19 ucla20_20)

egen Anxious_total = rowtotal(anxiousposting_1 anxiousposting_2 anxiousposting_3
anxiousposting_4 anxiousposting_5)

egen Loss_of_control_total = rowtotal(lossofcontrol_1 lossofcontrol_2 lossofcontrol_3
lossofcontrol_4 lossofcontrol_5 lossofcontrol_6 lossofcontrol_7 lossofcontrol_8
lossofcontrol_9 lossofcontrol_10 lossofcontrol_11)

egen socialapproval_total = rowtotal(socialapproval_1 socialapproval_2 socialapproval_3
socialapproval_4 socialapproval_5 socialapproval_6)

egen feelingsofdis_total = rowtotal(feelingsofdiscom_1 feelingsofdiscom_2
feelingsofdiscom_3 feelingsofdiscom_4 feelingsofdiscom_5)

egen selfdep_total = rowtotal(selfdeprecatingcom_1 selfdeprecatingcom_2
selfdeprecatingcom_3 selfdeprecatingcom_4 selfdeprecatingcom_5 selfdeprecatingcom_6)

egen passiveuse_total = rowtotal(passiveuse_1 passiveuse_2 passiveuse_3 passiveuse_4)

/* run correlation tests using the UCLA_total as the dependent variable */

ssc install asdoc

spearman UCLA_total gender_encoded age_encoded Anxious_total socialapproval_total
feelingsofdis_total selfdep_total passiveuse_total Loss_of_control_total, stats(rho p)

asdoc spearman UCLA_total gender_encoded age_encoded Anxious_total
socialapproval_total feelingsofdis_total selfdep_total passiveuse_total Loss_of_control_total,
stats (rho p) save
```

pwcorr UCLA_total gender_encoded age_encoded Anxious_total socialapproval_total feelingsofdis_total selfdep_total passiveuse_total Loss_of_control_total, sig

asdoc pwcorr UCLA_total gender_encoded age_encoded Anxious_total socialapproval_total feelingsofdis_total selfdep_total passiveuse_total Loss_of_control_total, append