# Your Photos on Instagram may Reveal more about Loneliness than you Think

Research suggests that loneliness is associated with an increased risk of early death comparable to that associated with smoking. In a recent study published, scientists at the University of California, San Diego, La Jolla, CA, USA, tested whether Instagram behavior among American college students reveals several distinct forms of loneliness.



## Study

The researchers used a cross-sectional observational design to examine whether Instagram data could capture different dimensions of loneliness among young people. Undergraduates at the University of California San Diego gave informed consent, completed questionnaires, and downloaded their Instagram archives from their account settings. The final sample included 415 participants after excluding those with missing data or incomplete surveys.

Loneliness was assessed with four validated questionnaires, which together yielded five measures. These included a single PERMA Profiler question on perceived loneliness (PERMA-Lon), the Lubben Social Network Scale (LSNS-6) for network size and support, the De Jong Gierveld scale with emotional loneliness and social loneliness subscales, and the 20-item UCLA Loneliness Scale (ULS-20).

From each archive, the team extracted three types of information. Behavioral features described account use, such as follower counts, posting, commenting, and liking frequency, and the proportion of posts made late at night or on weekends. Visual features came from profile and post photos, where software detected the number of faces, head tilt and turn, facial expressions, and color. Linguistic features were obtained from captions and comments, which were analyzed for emotional tone and word choice.

Next, the researchers narrowed the large pool of features to those most relevant to loneliness. They then trained several machine learning models to classify participants as lower or higher scorers on each loneliness measure. The models were tested on data they had not seen before. Finally, the team examined how 19 selected features contributed to differences in emotional and social loneliness scores, to see whether the two types left different traces online.

## Results

The study found that Instagram behavior provided moderately useful information about self-reported loneliness, but it said much less about participants' network size and contact with family and friends. The findings indicated that feeling lonely and having a small social circle are not necessarily the same thing, and Instagram was more informative about subjective loneliness than structural isolation.

A few indicators appeared across several ways of measuring loneliness. People who posted photos with fewer faces, chose profile pictures with their heads tilted upward, or wrote captions that looked back on the past were more likely to report loneliness. Of these, fewer faces per post was the strongest candidate marker. It remained associated with loneliness on two measures even after the researchers accounted for symptoms of depression and anxiety, suggesting that the association was not entirely explained by these conditions.

The clues also differed by the kind of loneliness. People who felt dissatisfied with their wider social network, known as social loneliness, tended to like fewer posts, comment less often, and share a lower proportion of photos containing faces. The authors suggested that lower engagement might reflect fewer opportunities for group participation.

By comparison, people who felt the absence of a close bond, known as emotional loneliness, were more likely to display sad or angry facial expressions in their profile pictures, use more negative wording in captions, and post late at night, which may reflect emotional distress and irregular daily routines rather than reduced social participation. More frequent posting was also associated with emotional loneliness, which the authors suggested could reflect attempts to seek close connections.

These findings suggest that loneliness is not one single experience. The patterns may inform future research on social participation and emotional support, but the study did not test interventions.

The findings may not extend to other populations: Participants attended one university, and the sample comprised mostly women and people aged 21 or younger, with Asian and White students forming the largest ethnic groups. While the authors believe that researchers and public health groups could one day use such patterns, with consent, to study loneliness across large groups, they also cautioned that this raises privacy concerns and that mistakes could label people wrongly or miss those who need help.

## Conclusion

Overall, the study showed that Instagram behavior carried detectable signs of subjective loneliness and that emotional and social loneliness left distinct online traces. Social loneliness was more closely associated with lower interpersonal engagement, whereas emotional loneliness correlated with negative language, sad or angry facial expressions in profile photographs, and late-night posting. Because the study was cross-sectional, it could not establish whether Instagram behavior preceded or followed feelings of loneliness. The findings supported a multidimensional view of loneliness and suggested that consented digital data could complement questionnaires in research on loneliness and social behavior.

## Source:

https://www.news-medical.net/news/20261109/Your-Instagram-photos-may-reveal-more-about-loneliness-than-you-think.aspx