

**Differential Associations Between Types Of Social Media Use And University Students’
Non-Suicidal Self-Injury And Suicidal Behavior**

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1 **Abstract**

2 **Objective.** To examine differential associations between types of social media use and non-
3 suicidal self-injury (NSSI) and suicidal behaviors.

4 **Methods.** Participants were N = 40,065 Norwegian college and university students, age 18-25,
5 from the 2018 Students' Health and Wellbeing (SHoT) study. Students reported on their use of
6 social media for seven specific activities, which we categorized into active and passive non-
7 social use, passive social use, active public social, and active private social use. We also
8 considered students' tendency for negative social comparisons on social media. Outcomes were
9 past-year NSSI, NSSI ideation, suicidal ideation, and suicide attempt. Covariates were age,
10 gender, total daily screen time and financial stress.

11 **Results.** Results of multiple logistic regression revealed differential associations between types
12 of social media use and outcomes. Notably, active social private use (e.g., messaging friends)
13 was associated with decreased odds of all outcomes, whereas active social public use (e.g., status
14 updates) was associated with increased odds of NSSI ideation, NSSI, and suicide attempt. Social
15 comparison was associated with increased odds of all outcomes.

16 **Conclusion.** Our results suggest that specific types of social media use are differentially
17 associated with NSSI and suicidal outcomes among university students.

18

19 **Keywords:** Non-suicidal self-injury; suicide attempt; social media use, young adults

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44 providing users at least some of the benefits of social connection despite boundaries such as
45 physical distance.¹² However, disproportionately little research has examined the implications of
46 the digital social landscape on mental health and suicidal behavior among university students.
47 Some research has linked social media use to negative outcomes, including depressive
48 symptoms^{13,14} – however, findings are mixed, with other studies reporting a protective effect of
49 social media use.^{12,15}

50 Recent reviews of studies examining associations between social media use and wellbeing
51 have suggested that these mixed findings may be due to a lack of precision in the way social
52 media use is operationalized.^{16,17} The term ‘social media’ is a broad catch-all for a wide range of
53 platforms and applications that serve as a medium for social interaction. Even within a given
54 platform, there are many different ways in which students can use the tools made available by
55 the medium. *Passive* use of social media describes use of a platform for the purpose of
56 consuming content,¹⁸ for example, reading posts or viewing pictures. *Active* use, on the other
57 hand, includes creation of both public (e.g., status updates, tweets) and private content (e.g.,
58 direct messages).¹⁹ Additionally, although much social media use is, as its name suggests, *social*
59 in nature, social media platforms are so ubiquitous that many users rely on them for *non-social*
60 activities – for example, accessing news items and media consumption.²⁰ Measures of social
61 media usage often ignore these various types of use - assessing, for example, only the total time
62 spent on social media.¹⁸

63 Different types of media use might be expected to be differentially associated with
64 outcomes – for example, active social use may serve to strengthen social networks and improve
65 social capital, which may in turn protect against poor mental health. On the other hand, excessive
66 passive use of such media may facilitate social comparison,¹⁶ which has been linked with

67 depression and NSSI in offline contexts.^{16,21,22} In one experimental study, passive, but not active,
68 use of social media predicted subsequent declines in subjective wellbeing.²³ Similarly, a large
69 population-based study of Icelandic adolescents suggested that whereas passive use of social
70 media was associated with symptoms of anxiety and depression, active use of social media was
71 not.²⁴ To our knowledge, no existing population-based studies have examined links between
72 types of social media use and NSSI and suicidal behavior.

73 The objective of the present study was therefore to examine associations between different
74 types of social media engagement (e.g., active vs. passive; public versus private) and NSSI and
75 suicidal behaviors among university students.

76

77 **2. Method**

78 Data were drawn from the SHoT-2018 study (Students' Health and Wellbeing Study), a survey
79 of approximately 50,000 Norwegian college and university students (ages 18-35), both in
80 Norway and studying abroad.²⁵ Data collection was conducted from February to April 2018 via
81 online questionnaire. Informed consent was obtained from all respondents; all procedures were
82 compliant with the Code of Ethics of the World Medical Association (Declaration of Helsinki).
83 Responses were received from 50,054 students, representing 30.8% of the eligible student
84 population. For the present study we focused on students age 18- 25 (corresponding to the
85 transitional period of early or emerging adulthood, as in previous literature),²⁶ yielding a final
86 sample of N = 40,065.

87

88 **2.1 Measures**

89 **2.1.1 Use of social media.** We assessed participants' use of social media for seven specific
90 activities. For the present study, we categorized these activities into *passive social* ("check out
91 what's happening among friends, groups I'm in, or about cultural activities"), *passive non-social*
92 ("read the news"), *active non-social* ("use social media associated with my studies"), *active*
93 *social public* ("post status updates or pictures of myself / friends"; "post links or comments on
94 issues or debates related to news, society, culture or politics"; $r = 0.36, p < .001$) and *active*
95 *social private* use ("make appointments with friends organize my daily life"; "Chat with friends
96 (individually or in groups)"; $r = 0.48, p < .001$). These questions are comparable to, though not
97 as exhaustive as, the activities listed in the Passive and Active Facebook Use Measure (PAUM)
98 used in other studies of social media use.²⁷ Participants rated their participation in each activity
99 on a 5-point scale: 'Never'; 'Seldom'; 'Weekly'; 'Daily'; 'Several times a day'; these response
100 options were comparable to those employed in other studies.²⁸ Participants' tendency for *social*
101 *comparison* on social media was assessed by the question: "I find that what others post (photos /
102 status updates) make me feel less satisfied with myself and my own life". Respondents indicated
103 their agreement on a 5-point scale from 'not at all' to 'very much'.

104 **2.1.2 NSSI and suicidal behaviour.** History of suicidal ideation, suicide attempts, and
105 NSSI were assessed by three items drawn from the Adult Psychiatric Morbidity Survey (AMPS):
106 "Have you ever seriously thought of taking your life, but not actually attempted to do so?";
107 "Have you ever made an attempt to take your life, by taking an overdose of tablets or in some
108 other way?"; "Have you ever deliberately harmed yourself in any way but not with the intention
109 of killing yourself?". The question about NSSI ideation was adapted from the Child and
110 Adolescent Self-Harm in Europe study (CASE): "Have you ever thought about trying to
111 deliberately harm yourself but not with the intention of killing yourself but have not actually

112 done so?”. Follow-up questions assessed the timing of the most recent episode of each outcome,
113 e.g.: “when did you last think about hurting yourself like this”, with response options: ‘in the last
114 week’; ‘in the last year’; ‘more than a year ago, but after I started studying’; ‘before I started
115 studying’. For the present study we considered NSSI and suicidal behaviours occurring in the
116 past year; responses were dichotomized as ‘yes’ or ‘no’.

117 **2.1.3 Covariates.** Participants self-reported their *age* and *gender*. *Total screen time* was self-
118 reported using the question “how many hours of screen usage do you have in total during one
119 day”, with response options from ‘0’ to ‘18 or more’ hours. *Financial stress* in the past 12
120 months was assessed using two items – one assessing difficulty paying running household costs
121 including food, transport, and housing, and one assessing difficulty managing a hypothetical
122 unexpected bill. For the present analyses, both items were dichotomized (‘yes’/‘no’).

123 **2.2 Analysis**

124 Separate multiple logistic regression models were estimated for each NSSI and suicide outcome.
125 First, we estimated associations between each type of social media use (passive non-social,
126 active non-social, passive social, active social public, and active social private), the tendency for
127 social comparison on social media, and outcomes. Next, we re-ran these models controlling for
128 age, gender, total screen time, and financial stress. As no substantive differences were observed
129 between these models, fully adjusted models are presented. To test the modifying effect of
130 gender on these associations, we fitted an interaction term between gender and each type of
131 social media use, for each outcome. None of these interactions were significant, hence we
132 present a model which pools across genders. Cases with missing data (< 6%) were listwise
133 deleted. All analyses were conducted using R software (version 3.6.1, The R Foundation for
134 Statistical Computing).

135 **3. Results**

136 Our final sample was comprised of over 70% women. Fifty-nine students did not indicate their
137 gender, and an additional 81 students reported a gender other than ‘man’ or ‘woman’. As this
138 sample size was not large enough to consider these gender categories separately, these
139 observations were excluded from further analyses. Approximately seven percent of the sample
140 reported experiencing suicidal ideation in the past year, with less than 5 in 1000 reporting a
141 suicide attempt; figures which did not differ significantly for men and women in the sample
142 (Table 1). Significantly more women reported thoughts (12.4%) and instances of NSSI (5.3%)
143 than did men (5.3% and 2.3%, respectively). Men and women in the sample reported
144 approximately 8 and 7 hours of screen time per day, respectively. Women reported greater use of
145 social media for social and active non-social activities, whereas men reported more passive non-
146 social usage (Table 1).

147 ***3.1 Associations between Media Use and Outcomes***

148 Results of fully adjusted models predicting NSSI and suicidality outcomes are presented in Table
149 2. Active social use in the public sphere (posting updates/pictures/articles) was associated with
150 increased odds of NSSI ideation, NSSI, and suicide attempt, whereas social private use
151 (messaging friends, making plans) was associated with reduced odds of all NSSI and suicidality
152 outcomes. Passive non-social use of social media was associated with decreased odds of NSSI
153 ideation, NSSI, and suicidal ideation. Finally, use of social media associated with studies (active
154 non-social use) was associated with reduced odds of suicide attempt. The tendency for social
155 comparison on social media was also positively associated with increased odds for all NSSI and
156 suicidality outcomes.

157

158 **4. Discussion**

159 In this large sample of Norwegian university students, we demonstrated consistent associations
160 between social media use and several outcomes related to NSSI and suicidality. In particular,
161 different types of social media engagement were differentially associated with all outcomes,
162 suggesting that associations between social media use and mental health may be more nuanced
163 than previously thought. Relatedly, social comparison on social media was positively associated
164 with suicide attempt, suicidal ideation, NSSI, and NSSI ideation.

165 *4.1 Public Versus Private Social Media Use*

166 Most notably, our results suggested that active use of social media in the public and private
167 sphere were differentially associated with NSSI and suicidality. Private social media use (that is,
168 messaging friends and organizing social plans) was protective against all four outcomes related
169 to NSSI and suicidality. Conversely, public social media use (e.g., posting links, photos, or status
170 updates) was associated with increased risk of NSSI and suicidality.

171 In recent years, Frison & Eggermont distinguished between public and private active use of
172 Facebook (e.g., posting status updates versus direct messaging).^{19,29} In a sample of adolescents,
173 they reported that public use was associated with greater depressed mood.²⁹ Private use, on the
174 other hand, was protective against depressed mood – a relationship mediated through
175 adolescents' level of perceived online social support. Our results extend this line of research,
176 using a large sample of young adults, asking explicitly about use of multiple social media
177 platforms, and focusing on NSSI and suicidality as outcomes. Several conceptual models of
178 media use suggest that making use of online social capital has beneficial effects for users.^{30,31}
179 One small longitudinal study suggested that even heavy smartphone use was protective against
180 loneliness when participants used these tools to engage in self-disclosure with peers.³² Private

181 messaging necessitates a specific, known recipient, perhaps indicating a greater degree of
182 familiarity or closeness. This type of social media engagement may therefore serve to strengthen
183 existing social networks.

184 Public use of social media, on the other hand, showed a positive relationship with suicide
185 attempt, suicide ideation, NSSI, and NSSI ideation. It has been hypothesised that the observed
186 association between public use of Facebook and depressed mood may have to do with the
187 feedback, or lack thereof, provided by peers in response to this activity.¹⁹ Public use of social
188 media may also be driven by different motivations than private use, which may help explain
189 differential associations with NSSI and suicidal behavior. Public use may be motivated by
190 approval-seeking, which in turn has been linked with elevated depressive symptoms.³³

191 In their study of Facebook use among high-school students, Frison and Eggermont further
192 reported a gender difference whereby public social use was beneficial for girls but detrimental
193 for boys.¹⁹ Though we explored interactions with gender, public social use was associated with
194 negative outcomes for both men and women in our sample. One possibility is that the relative
195 gender equity observed in Norwegian culture³⁴ translates into fewer gender differences in the
196 processes governing associations between social media use and mental health. Another
197 possibility is that social media use is differentially associated with outcomes at different
198 developmental stages (i.e., adolescence versus young adulthood), or that these processes may
199 operate differently for NSSI and suicidality than for other mental health outcomes. Unlike the
200 persistent gender differences noted for depression; gender differences in rates of suicide attempt
201 tend to peak in mid-adolescence, with rates among men and women roughly equal by age 19;³⁵ it
202 is possible that gender differences in the processes linking social media use and suicidality may
203 similarly narrow. However, it should be noted that our sample was 70% female, slightly higher

204 than the proportion of female students observed at the national level (60%).³⁶ It is possible that
205 this finding is an artefact of the sample composition, and would not generalize to the Norwegian
206 university student population as a whole.

207 *4.2 Passive Social Media Use and Social Comparison*

208 Other authors have reported that passive use of social media (e.g., browsing others' photographs)
209 is associated with poorer mental health.^{19,23,24} In our sample, we found no evidence for an
210 association between passive media use and NSSI or suicidality. However, our measurement of
211 passive social use of social media was restricted to a single item, whereas other studies have
212 employed more detailed measures of passive use.

213 Social media profiles are often highly curated, showcasing only the most positive aspects
214 of users' lives. Passive use of social media is hypothesized to facilitate unfavourable social
215 comparisons, placing users at risk for feelings of envy and lowered self-esteem.¹⁶ It is these
216 negative appraisals of the self in comparison to others that are thought to drive the associations
217 between passive social media use and poor mental health.

218 Contrary to expectations, in our study, we found a weak association between passive social
219 media use and NSSI outcomes, where passive use was associated with lower odds of NSSI
220 ideation and behavior in fully adjusted models. However, participants' self-reported tendency for
221 negative social comparison on social media was positively associated with NSSI and suicidality.
222 This finding extends previous work suggesting that social comparison on social media is
223 associated with lower subjective wellbeing²³ and greater depressed mood.¹⁶ Reducing use of
224 social media for those vulnerable to making unfavourable social comparisons may therefore be
225 one way to mitigate potential negative effects of social media use on NSSI and suicidal behavior.
226 Results of one small experimental study suggested that refraining from using Instagram for a

227 week was associated with higher life satisfaction – particularly for participants’ who reported a
228 high tendency for social comparison.³⁷ In a Danish experimental study, Tromholt (2016) reported
229 that taking a break from Facebook was associated with increased life satisfaction and positive
230 emotionality comparative to the control group – associations that were more pronounced among
231 participants who mostly used the platform passively, and those who were more prone to envy.
232 Our results suggest similar mechanisms may apply to the links between social media use and
233 NSSI and suicidal behavior.

234 ***4.3 Non-Social Use of Social Media***

235 In addition to the many social uses of social media, university students often use these tools for
236 non-social reasons: for example, in conjunction with their studies, or to engage with current
237 events. Our results suggested that non-social use of social media was at worst, not associated
238 with, and at best, negatively associated with, NSSI and suicidal outcomes. Passive non-social use
239 (exemplified by reading the news) in particular, was associated with decreased odds of three out
240 of four outcomes. Previous researchers have worried that exposure to troubling current events
241 may decrease wellbeing, but specific topics, reporting, and context of news consumed may alter
242 its effects on mental health.³⁹ Some evidence suggests that among young adults, news
243 consumption on the internet may be positively related to civic participation and perceptions of
244 social capital.⁴⁰

245 ***4.4 Limitations and Strengths***

246 The cross-sectional design of the study did not allow us to assess temporality in the associations
247 between social media use, NSSI, and suicidal behaviour. For example, it is possible that
248 engagement in NSSI and suicidal behavior may lead to different types of social media
249 engagement. Though the measure of social media use employed in the current study was

250 comparable with those used in other studies,²⁷ when considering separate types of social media
251 use, several categories of media use were represented by a single item (e.g., ‘read the news’ for
252 passive non-social use). Ideally, future studies of public versus private social media use would
253 use several items reflecting each construct. Further, the content of social media use was not
254 assessed- for example, students may use social media to access content related to NSSI and
255 suicidal behavior, which may increase their own risk of such behaviours.⁴¹ Cyberbullying, which
256 has been associated with NSSI among young adults,⁴² may also occur through social media
257 platforms. Data for the SHoT study was collected online, and may, therefore, have been subject
258 to some selection bias, as students who lack access to or rarely engage with social media may
259 have been less likely to participate in the study. Finally, suicidality, NSSI, and NSSI ideation
260 were assessed using only four items; though these items have high face validity and are
261 comparable to assessments of NSSI and suicidality in other epidemiological studies,^{43–45} more
262 exhaustive validated measures of these constructs would be ideal. Strengths of the study included
263 a large sample size and questions about multiple types of social media use.

264 ***4.5 Conclusions and Implications***

265 By and large, our results suggest that social media is not a monolith with unilateral consequences
266 for wellbeing among young adults. Rather, we suggest that social media represents a toolbox
267 with multiple, distinct uses – each differentially associated with youth self-injury and suicidal
268 outcomes. Inconsistent findings in previous literature are likely due to the fact that authors have
269 rarely and inconsistently distinguished between these different ways of using social media.

270 Though we identified protective associations between private social media use and suicidal
271 outcomes, public social media use was associated with greater likelihood of NSSI and suicidal
272 behaviors. Optimistically, in addition to promoting use of social media to connect privately with

273 friends and family, it may be possible to mitigate the negative consequences of maladaptive use
274 of social media. In one study of UK adolescents, family meal frequency moderated the negative
275 association between time spent on social media and wellbeing – among teens who frequently sat
276 down to meals with their family, social media use showed no association with wellbeing.⁴⁶
277 Bolstering family connections, even when physically separated, and strengthening face-to-face
278 connections with friends may therefore be important in promoting mental health among
279 university students in the digital age.

280 Social media platforms may also be used proactively to intervene on NSSI and suicidal
281 behavior, in a way that is likely to be palatable and accessible to adolescents and young adults.
282 Social media support has been shown to facilitate young adults' adjustment to college,⁴⁷ and
283 social media interventions for those at risk of suicide have been tested and proven safe and
284 feasible.⁴⁸ These studies further emphasize our primary conclusion that although some aspects of
285 social media may be detrimental to youth mental health, other aspects may be beneficial.

286 **REFERENCES**

- 287 1. Arnett JJ, Žukauskiene R, Sugimura K. The new life stage of emerging adulthood at ages
288 18-29 years: Implications for mental health. *The Lancet Psychiatry*. 2014;1(7):569-576.
289 doi:10.1016/S2215-0366(14)00080-7
- 290 2. Fergusson DM, Woodward LJ, Horwood LJ. Risk factors and life processes associated
291 with the onset of suicidal behaviour during adolescence and early adulthood. *Psychol*
292 *Med*. 2000;30(1):23-39. doi:10.1017/S003329179900135X
- 293 3. MacKinnon N, Colman I. Factors associated with suicidal thought and help-seeking
294 behaviour in transition-aged youth versus adults. *Can J Psychiatry*. 2016;61(12):789-796.
295 doi:10.1177/0706743716667417
- 296 4. Gandhi A, Luyckx K, Baetens I, et al. Age of onset of non-suicidal self-injury in Dutch-
297 speaking adolescents and emerging adults: An event history analysis of pooled data.
298 *Compr Psychiatry*. 2018;80:170-178. doi:10.1016/j.comppsy.2017.10.007
- 299 5. World Health Organization. Suicide. [https://www.who.int/health-](https://www.who.int/health-topics/suicide#tab=tab_1)
300 [topics/suicide#tab=tab_1](https://www.who.int/health-topics/suicide#tab=tab_1). Published 2019. Accessed July 27, 2020.
- 301 6. Eskin M, Sun JM, Abuidhail J, et al. Suicidal behavior and psychological distress in
302 university students: A 12-nation study. *Arch Suicide Res*. 2016;20(3):369-388.
303 doi:10.1080/13811118.2015.1054055
- 304 7. Garlow SJ, Rosenberg J, Moore JD, et al. Depression, desperation, and suicidal ideation in
305 college students: Results from the American Foundation for Suicide Prevention College
306 Screening Project at Emory University. *Depress Anxiety*. 2008;25(6):482-488.
307 doi:10.1002/da.20321
- 308 8. Sivertsen B, Hysing M, Knapstad M, et al. Suicide attempts and non-suicidal self-harm

- 309 among university students: prevalence study. *BJPsych Open*. 2019;5(2).
310 doi:10.1192/bjo.2019.4
- 311 9. Bostwick JM, Pabbati C, Geske JR, McKean AJ. Suicide attempt as a risk factor for
312 completed suicide: Even more lethal than we knew. *Am J Psychiatry*. 2016;173(11):1094-
313 1100. doi:10.1176/appi.ajp.2016.15070854
- 314 10. Cipriano A, Cella S, Cotrufo P. Nonsuicidal self-injury: A systematic review. *Front*
315 *Psychol*. 2017;8(NOV). doi:10.3389/fpsyg.2017.01946
- 316 11. Gardner W, Pajer K, Cloutier P, et al. Changing rates of self-harm and mental disorders by
317 sex in youths presenting to Ontario emergency departments: repeated cross-sectional
318 study. *Can J Psychiatry*. 2019;64(11):789-797. doi:10.1177/0706743719854070
- 319 12. Ellison NB, Steinfield C, Lampe C. The benefits of Facebook “friends:” Social capital and
320 college students’ use of online social network sites. *J Comput Commun*. 2007;12(4):1143-
321 1168. doi:10.1111/j.1083-6101.2007.00367.x
- 322 13. Kross E, Verduyn P, Demiralp E, et al. Facebook use predicts declines in subjective well-
323 being in young adults. *PLoS One*. 2013;8(8):e69841. doi:10.1371/journal.pone.0069841
- 324 14. Sagioglou C, Greitemeyer T. Facebook’s emotional consequences: Why Facebook causes
325 a decrease in mood and why people still use it. *Comput Human Behav*. 2014;35:359-363.
326 doi:10.1016/j.chb.2014.03.003
- 327 15. Valenzuela S, Park N, Kee KF. Is there social capital in a social network site?: Facebook
328 use and college student’s life satisfaction, trust, and participation1. *J Comput Commun*.
329 2009;14(4):875-901. doi:10.1111/j.1083-6101.2009.01474.x
- 330 16. Appel H, Gerlach AL, Crusius J. The interplay between Facebook use, social comparison,
331 envy, and depression. *Curr Opin Psychol*. 2016;9:44-49.

- 332 doi:10.1016/j.copsyc.2015.10.006
- 333 17. Orben A. Teenagers, screens and social media: a narrative review of reviews and key
334 studies. *Soc Psychiatry Psychiatr Epidemiol.* 2020;55(4):407-414. doi:10.1007/s00127-
335 019-01825-4
- 336 18. Davenport SW, Bergman SM, Bergman JZ, Fearington ME. Twitter versus Facebook:
337 Exploring the role of narcissism in the motives and usage of different social media
338 platforms. *Comput Human Behav.* 2014;32:212-220. doi:10.1016/j.chb.2013.12.011
- 339 19. Frison E, Eggermont S. Toward an integrated and differential approach to the
340 relationships between loneliness, different types of Facebook use, and adolescents'
341 depressed mood. *Communic Res.* December 2015:009365021561750.
342 doi:10.1177/0093650215617506
- 343 20. Broersma M, Graham T. Social media as beat: Tweets as a news source during the 2010
344 British and Dutch elections. *Journal Pract.* 2012;6(3):403-419.
345 doi:10.1080/17512786.2012.663626
- 346 21. Gilbert P, McEwan K, Bellew R, Mills A, Corinne G. The dark side of competition: How
347 competitive behaviour and striving to avoid inferiority are linked to depression, anxiety,
348 stress and self-harm. *Psychol Psychother Theory, Res Pract.* 2009;82(2):123-136.
349 doi:10.1348/147608308X379806
- 350 22. Gilbert P, McEwan K, Irons C, et al. Self-harm in a mixed clinical population: The roles
351 of self-criticism, shame, and social rank. *Br J Clin Psychol.* 2010;49(4):563-576.
352 doi:10.1348/014466509X479771
- 353 23. Verduyn P, Lee DS, Park J, et al. Passive Facebook usage undermines affective well-
354 being: Experimental and longitudinal evidence. *J Exp Psychol Gen.* 2015;144(2):480-488.

- 355 doi:10.1037/xge0000057
- 356 24. Thorisdottir IE, Sigurvinsdottir R, Asgeirsdottir BB, Allegrante JP, Sigfusdottir ID. Active
357 and passive social media use and symptoms of anxiety and depressed mood among
358 Icelandic adolescents. *Cyberpsychol Behav Soc Netw*. 2019;22(8):535-542.
359 doi:10.1089/cyber.2019.0079
- 360 25. Sivertsen B, Råkil H, Munkvik E, Lønning KJ. Cohort profile: The SHoT-study, a
361 national health and well-being survey of Norwegian university students. *BMJ Open*.
362 2019;9(1):e025200. doi:10.1136/bmjopen-2018-025200
- 363 26. Arnett JJ. Emerging adulthood: A theory of development from the late teens through the
364 twenties. *Am Psychol*. 2000;55(5):469-480. doi:10.1037/0003-066X.55.5.469
- 365 27. Gerson J, Plagnol AC, Corr PJ. Passive and Active Facebook Use Measure (PAUM):
366 validation and relationship to the Reinforcement Sensitivity Theory. *Pers Individ Dif*.
367 2017;117:81-90. doi:10.1016/j.paid.2017.05.034
- 368 28. Krasnova H, Wenninger H, Widjaja T, Buxmann P. Envy on Facebook : A Hidden Threat
369 to Users ' Life Satisfaction ? In: ; 2013:1-16.
- 370 29. Frison E, Eggermont S. Exploring the relationships between different types of Facebook
371 use, perceived online social support, and adolescents' depressed mood. *Soc Sci Comput
372 Rev*. 2016;34(2):153-171. doi:10.1177/0894439314567449
- 373 30. McKenna KYA, Bargh JA. Plan 9 from cyberspace: The implications of the internet for
374 personality and social psychology. *Personal Soc Psychol Rev*. 2000;4(1):57-75.
375 doi:10.1207/S15327957PSPR0401_6
- 376 31. Kraut R, Kiesler S, Boneva B, Cummings J, Helgeson V, Crawford A. Internet paradox
377 revisited. *J Soc Issues*. 2002;58(1):49-74. doi:10.1111/1540-4560.00248

- 378 32. Karsay K, Schmuck D, Matthes J, Stevic A. Longitudinal effects of excessive smartphone
379 use on stress and loneliness: the moderating role of self-disclosure. *Cyberpsychology,*
380 *Behav Soc Netw.* 2019;22(11):706-713. doi:10.1089/cyber.2019.0255
- 381 33. Nesi J, Prinstein MJ. Using social media for social comparison and feedback-seeking:
382 gender and popularity moderate associations with depressive symptoms. *J Abnorm Child*
383 *Psychol.* 2015;43(8):1427-1438. doi:10.1007/s10802-015-0020-0
- 384 34. Borchorst A, Siim B. Woman-friendly policies and state feminism: Theorizing
385 Scandinavian gender equality. *Fem Theory.* 2008;9(2):207-224.
386 doi:10.1177/1464700108090411
- 387 35. Lewinsohn PM, Rohde P, Seeley JR, Baldwin CL. Gender differences in suicide attempts
388 from adolescence to young adulthood. *J Am Acad Child Adolesc Psychiatry.*
389 2001;40(4):427-434.
- 390 36. Statistics Norway. Students in higher education.
391 <https://www.ssb.no/en/utdanning/statistikker/utuvh>. Published 2020. Accessed June 29,
392 2020.
- 393 37. Fioravanti G, Probst A, Casale S. Taking a short break from instagram: the effects on
394 subjective well-being. *Cyberpsychology, Behav Soc Netw.* 2020;23(2):107-112.
395 doi:10.1089/cyber.2019.0400
- 396 38. Tromholt M. The Facebook experiment: quitting Facebook leads to higher levels of well-
397 being. *Cyberpsychology, Behav Soc Netw.* 2016;19(11):661-666.
398 doi:10.1089/cyber.2016.0259
- 399 39. Boukes M, Vliegenthart R. News consumption and its unpleasant side effect: Studying the
400 effect of hard and soft news exposure on mental well-being over time. *J Media Psychol.*

- 401 2017;29(3):137-147. doi:10.1027/1864-1105/a000224
- 402 40. Shah D V., McLeod JM, Yoon SH. Communication, context, and community: An
403 exploration of print, broadcast, and internet influences. *Communic Res.* 2001;28(4):464-
404 506. doi:10.1177/009365001028004005
- 405 41. Arendt F, Scherr S, Romer D. Effects of exposure to self-harm on social media: Evidence
406 from a two-wave panel study among young adults. *New Media Soc.* 2019;21(11-12):2422-
407 2442. doi:10.1177/1461444819850106
- 408 42. John A, Glendenning AC, Marchant A, et al. Self-harm, suicidal behaviours, and
409 cyberbullying in children and young people: Systematic review. *J Med Internet Res.*
410 2018;20(4):e129. doi:10.2196/jmir.9044
- 411 43. Duffy ME, Twenge JM, Joiner TE. Trends in mood and anxiety symptoms and suicide-
412 related outcomes among U.S. undergraduates, 2007–2018: evidence from two national
413 surveys. *J Adolesc Heal.* 2019;65(5):590-598. doi:10.1016/j.jadohealth.2019.04.033
- 414 44. McManus S, Gunnell D. Trends in mental health, non-suicidal self-harm and suicide
415 attempts in 16–24-year old students and non-students in England, 2000–2014. *Soc*
416 *Psychiatry Psychiatr Epidemiol.* 2020;55(1):125-128. doi:10.1007/s00127-019-01797-5
- 417 45. O'Connor RC, Wetherall K, Cleare S, et al. Suicide attempts and non-suicidal self-harm:
418 national prevalence study of young adults. *BJPsych Open.* 2018;4(3):142-148.
419 doi:10.1192/bjo.2018.14
- 420 46. Jagtiani MR, Kelly Y, Fancourt D, Shelton N, Scholes S. #StateOfMind: Family meal
421 frequency moderates the association between time on social networking sites and well-
422 being among U.K. young adults. *Cyberpsychology, Behav Soc Netw.* 2019;22(12):753-
423 760. doi:10.1089/cyber.2019.0338

- 424 47. Deandrea DC, Ellison NB, Larose R, Steinfield C, Fiore A. Serious social media: On the
425 use of social media for improving students' adjustment to college. *Internet High Educ.*
426 2012;15(1):15-23. doi:10.1016/j.iheduc.2011.05.009
- 427 48. Rice S, Robinson J, Bendall S, et al. Online and social media suicide prevention
428 interventions for young people: A Focus on implementation and moderation. *J Can Acad*
429 *Child Adolesc Psychiatry.* 2016;25(2):80-86.
- 430

Table 1. Descriptive statistics

	Males (N = 11937)	Females (N = 28128)	<i>p</i> -value for difference ^a
	%		
NSSI ideation (yes)	5.3%	12.4%	< .001
NSSI (yes)	2.3%	5.2%	< .001
Suicidal ideation (yes)	6.6%	7.3%	0.093
Suicide attempt (yes)	0.4%	0.5%	0.232
Financial stress			
Difficulty affording basic necessities (yes)	21.9%	30.0%	< .001
Difficulty coping with unexpected bill (yes)	69.6%	60.3%	< .001
	Mean (SD)		
Age	22.19 (1.75)	21.94 (1.73)	< .001
Screen time (hours per day)	7.92 (3.44)	7.05 (3.39)	< .001
Active social	2.80 (0.58)	2.96 (0.50)	< .001
Public	1.66 (0.69)	1.77 (0.59)	< .001
Private	3.94 (0.78)	4.15 (0.73)	< .001
Passive social	3.59 (1.05)	3.77 (0.99)	< .001
Active non social	3.27 (1.13)	3.34 (1.10)	< .001
Passive non-social	3.89 (1.19)	3.81 (1.06)	< .001
Social comparison	1.81 (1.00)	2.52 (1.15)	< .001

NSSI: Non-suicidal self-injury

^a *p*-values based on independent sample *t*-tests

Table 2. Associations between types of social media use and outcomes; adjusted models ^a

	NSSI ideation n = 37,510		NSSI n = 37,623		Suicidal Ideation n = 37,485		Suicide Attempt n = 37,560	
	OR	95% CI	OR	95% CI	OR	95% CI	OR	95% CI
Passive non-social	0.90	0.88, 0.93	0.89	0.86, 0.94	0.90	0.86, 0.93	0.90	0.78, 1.04
Active non-social	1.00	0.96, 1.02	1.00	0.95, 1.04	0.97	0.93, 1.01	0.80	0.69, 0.92
Passive social	0.95	0.92, 0.99	0.91	0.86, 0.97	1.00	0.95, 1.05	0.92	0.77, 1.10
Active social								
public	1.19	1.12, 1.25	1.26	1.16, 1.37	1.06	0.99, 1.14	1.55	1.22, 1.95
private	0.80	0.76, 0.84	0.80	0.74, 0.86	0.73	0.69, 0.78	0.73	0.58, 0.92
Social comparison	1.43	1.39, 1.47	1.40	1.35, 1.46	1.52	1.47, 1.57	1.66	1.46, 1.89

NSSI: Non-suicidal self-injury

^a Adjusted for age, gender, screen time, and financial stress.