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Title

Posts or Messaging? Identifying the Dominant Feature Behind Social Media Addiction

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POSTS OR MESSAGING? IDENTIFYING THE DOMINANT FEATURE BEHIND SOCIAL MEDIA ADDICTION[1]

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Abstract

A documented phenomenon is that people want to quit social media but do not. A leading explanation is that the content shown on social media is addictive. However, I use a survey to show that the content is not the main reason people say they cannot leave social media. Instead, it is losing the ability to communicate through direct messaging.

I. Introduction

Since its creation, the use of social media has seen an exponential increase. It has been reported that adults in the United States spent an average of 2 hours and 3 minutes per day on social media in 2022,[2] which makes up approximately 40 percent of the 5 hours and 16 minutes the average American spends per day in leisure time.[3] However, despite taking up such a large portion of leisure time, many users report spending more time on social media than they want (Thompson and Lougheed, 2012) and having a negative view of their social media usage (Gedik & Cosar 2023). In a recent New York Times article,[4] one teenager states "I resent [social media] a lot actually, I could rant all day about why I don't like social media and why I think it's one of the great cancers of our generation." Another talked similarly about their dislike of social media's addictive capabilities and how it manipulated his sense of reward. Additionally, in early 2023 the United States surgeon general Dr. Vivek Murthy released a 19-page advisory in which he states "there are ample indicators that social media can also have a profound risk of harm to the mental health and well-being of children and adolescents."[5]

Given the negative perceptions of their own social media use, why do people continue to spend so much time on social media? Two leading prospects are that people do not want to miss the posts hosted on social media and that social media is necessary due to the communication channels it hosts (direct messaging). In this paper, I look at which of these prospects dominates how much they use social media and presented vignettes in which a hypothetical peer missed out on different features of social media. Vignettes have been an important tool in previous experimental research, including the establishment of status quo bias in decision making (Samuelson and Zeckhauser, 1988). Determining the effects of reference and anchor points in decision making were also aided greatly by the use of vignettes (Tversky and Kahneman, 1991).

In this survey, I found that the favorite aspect of social media among respondents was most commonly seeing posts of what their friends and family are doing. However, losing the ability to direct message was most commonly identified as the largest deterrent to uninstalling social media. In response to the vignettes, respondents reported feeling worse about a peer uninstalling social media after missing a message than missing posts and were more likely to recommend a peer keep social media uninstalled after missing posts than after missing a message.

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2 Dixon, S. J. (2023, August 29). Global Daily Social Media Usage 2023. Statista.

https://www.statista.com/statistics/433871/daily-social-media-usage-worldwide/

3 U.S. Bureau of Labor Statistics. (n.d.). Men spent 5.6 hours per day in leisure and sports activities, women 4.9 hours, in 2021. U.S. Bureau of Labor Statistics.

https://www.bls.gov/opub/ted/2022/men-spent-5-6-hours-per-day-in-leisure-and-sports-activities-women-4-9-hours-in-2021.htm

4 Closson, T., Bensimon, O., Parnell, W., & Michael. (2023, May 24). Teenagers resent social media. They also made recent efforts to take it away. The New

York Times. https://www.nytimes.com/2023/05/24/nyregion/social-media-teenagers-health-nyc.html?searchResultPosition=4

5 Social Media and youth mental health - hhs.gov. (n.d.). https://www.hhs.gov/sites/default/files/sg-youth-mental-health-social-media-advisory.pdf

There is evidence that social media use and perceptions vary by gender (Alnjadat et al. 2019). I similarly find a gender difference in how respondents interacted with different social media features in the multiple-choice questions. Also, I vary the gender of the peer in each vignette. Despite the prior evidence in the literature of gender differences in social perceptions (Thompson and Lougheed, 2012), I find no evidence that the gender of an affected peer plays a role in how respondents view different features of social media or which features are larger deterrents to uninstalling social media. Furthermore, the gender difference in respondents seen in the multiple-choice questions disappeared when reacting to the vignettes, both when the affected peer was male and female.

This paper builds on the existing literature which describes the emergence of social media overuse and addiction. One such study shows that almost half of university students experience social media overuse with symptoms potentially leading to future pathological use (Niculović et al. 2014). Overuse of social media is associated with feelings of jealousy, anxiety, and depression (Elphinston and Noller, 2011, Pantic, 2014), low life satisfaction (Blachnio et al., 2016, Hawi and Samaha, 2016), low work performance (Kuss et al., 2014, Xanidis and Brignell, 2016), sleep problems (Koc and Gulyagci, 2013, Wolniczak et al., 2013), and less healthy social relationships (Fox and Moreland, 2015, Müller et al., 2016). In conjunction with the negative effects cited above, pathological social media use has been increasing and currently affects 10-15% of emerging adults (Holmgren and Coyne, 2017).

I add to this literature by identifying why people are addicted to social media and which features are dominant in their ability to prevent people from quitting social media. This study uncovers communication channels as the dominant barrier to exit social media, showing social media users how to change their habits to decrease the time they spend on the platforms. Furthermore, this paper contributes to the existing research on the value add of social media (Bechmann & Lomborg, 2013) by revealing the aspects of social media which its users least want to give up. The information in this study can also be helpful to companies and policymakers as they make decisions related to public relations, marketing and policy proposals.

II. Survey Design

The data for this paper was collected via a survey which was conducted through the survey research platform Prolific. The survey took approximately 3 minutes to complete, and participants were paid 60 cents to participate.

The survey began with a welcome screen which explained the survey and participants were then given 7 multiple-choice questions in a randomized order. After answering the multiple-choice questions, participants were given an explicit attention check which they needed to pass to be included in the study. After passing the attention check, respondents were randomly given a pair of vignettes which had the same gender treatment (participants either received Nick or Alexa as the subject for both their vignettes) and different treatments of what the subject of the vignette missed by uninstalling social media. The order in which the respondents received their vignettes was randomized. After responding to the vignettes, participants were taken to a thank you screen and redirected to Prolific.

The 7 multiple choice questions were:

1. What would be a larger deterrent to quitting social media?

2. What is your favorite aspect of using social media?

3. How much of your communication with friends and family is through a social media platform? (0 = none, 4 = all)

4. How do you feel about the amount of time you spend on social media? (0 = much less time than I want, 4 = much more time than I want

5. What percent of the people you follow on social media do you genuinely care about what they post?

6. How much time do you spend messaging people through social media on average per day?

7. How much time do you spend looking at social media posts on average per day?

The vignettes used in this survey gauged how respondents reacted across the gender of a peer to the loss of messaging and the loss of online content (posts) after uninstalling social media. The vignette was given to participants as follows:

[Alexa/Nick] is a 21 year old college student who's been dealing with tight deadlines lately and has been feeling extra stressed. Since [she's/he's] been spending 2 hours a day on social media, [Alexa/Nick] decided to uninstall [her/his] social media apps to free up time and allow

[her/him] to focus. However, after uninstalling the apps [she/he] missed {a few posts from [her/his] close friends/a message from a friend wanting to catch up}.

How would you feel if you were in [Alexa's/Nick's] situation?
(2 = Very happy with decision to uninstall, -2 = very unhappy with decision to uninstall)

If you were [Alexa's/Nick's] friend, would you recommend keeping the apps uninstalled?
(yes/no)
What advice would you give to [Alexa/Nick]?
(free response)

The survey had 792 participants, composed of 393 males and 399 females. Participants were accepted from a pool of 3,100 verified Prolific respondents who were filtered to be students in the United States between the ages of 19 to 24, which was done to match the subjects in the vignettes and increase the power of the study.

A pilot study of 74 participants was carried out before administering the final survey. The pilot study yielded results in-line with the final survey except for one change which was made to the second vignette question which changed the response range from a 5-point Likert scale to yes/no in order to allow for a more straightforward interpretation of results.

III. Empirical Specification

To examine the relationship between vignette treatment and whether a respondent felt positive about uninstalling social media and whether they would recommend keeping social media uninstalled, I utilize a series of Ordinary Least Squares (OLS) regressions. In order to create the regressions, I created binary variables for each vignette treatment, multiple choice question and vignette response.

Y variables (dependent):

Y_i = 1 if the respondent felt positive about uninstalling social media (1 or 2 on likert scale) and 0 otherwise
Y_j = 1 if the respondent would recommend keeping social media uninstalled and 0 if they would not

X variables (independent)

Alexa/Post = 1 if observation received the Alexa and Post vignette treatments
Alexa/Message = 1 if observation received the Alexa and Message vignette treatments
Nick/Post = 1 if observation received the Nick and Post vignette treatments Male = 1 if respondent is male
Black = 1 if the respondent's ethnicity is Black/African American

Mixed Race/Other = 1 if respondent's ethnicity is mixed race or other
Asian = 1 if respondent's ethnicity is Asian
Time Spent Posts = 1 if respondent spends more than 2 hours per day looking at posts Time
Spent Messaging = 1 if respondent spends more than 30 minutes per day messaging through
social media
Percent Cared About = 1 if the respondent cares about at least 25% of the people they follow
Addiction = 1 if respondent spends more time on social media than they want to Percent
Communication = 1 if respondent has majority of communication with friends/family through
social media
Favorite Aspect = 1 if respondent's favorite aspect of social media is messaging Largest
Deterrent = 1 if respondent's largest deterrent of leaving social media is losing messaging

Using these variables, the following OLS regressions are created:

$$Y_{1, ij} = \beta_0 + \beta_1 [\text{Alexa/Post}] + \beta_2 [\text{Alexa/Message}] + \beta_3 [\text{Nick/Post}]$$

Regression 1 shows on average if each of the three vignette treatments has a significant effect
on if a respondent feels positive about uninstalling social media and if the respondent
recommends keeping the app uninstalled.

$$Y_{2, ij} = Y_1 + \beta_4 [\text{Male}] + \beta_5 [\text{Black}] + \beta_6 [\text{Mixed Race/Other}] + \beta_7 [\text{Asian}]$$

Regression 2 adds correlates to Regression 1 to control for important demographic factors and
shows if the sex or ethnicity of the respondent has a significant effect.

$$Y_{3, ij} = Y_2 + \beta_8 [\text{Male*Alexa/Post}] + \beta_9 [\text{Male*Alexa/Message}] + \beta_{10} [\text{Male*Nick/Post}]$$

Regression 3 adds interaction terms between the vignette treatment and sex of the respondent
to Regression 2 to show if respondents of different sex respond differently to the vignette
treatments.

$$Y_{4, ij} = Y_3 + \beta_{11} [\text{Time Spent Posts}] + \beta_{12} [\text{Time Spent Messaging}] + \beta_{13} [\text{Percent Cared About}] + + \beta_{14} [\text{Addiction}] + \beta_{15} [\text{Percent Communication}] + \beta_{16} [\text{Favorite Aspect}] + j + \beta_{17} [\text{Largest Deterrent}]$$

Regression 4 adds in the multiple-choice responses to show if the social media habits of
respondents have a significant effect on if a respondent feels positive about uninstalling social
media and if the respondent recommends keeping the app uninstalled.

IV. Summary Statistics

Looking at the distributions of the multiple-choice questions, a general idea of the social media
habits of the survey participants can be formed. In Fig. 1 we see that when explicitly asked
what their favorite aspect of social media is, the most popular answer was posts from their

friends, followed by communication through the apps, followed by entertainment posts and lastly news posts. However, Fig. 2 shows when asked what the largest deterrent to quitting social media is, the order of communication and seeing posts from friends switched, with losing communication being the larger deterrent.

From Fig. 3 we can also see that approximately 60 percent of respondents report spending more time on social media than they want, which is in line with other studies on social media use (note that overuse is different than the less prevalent case of pathological use/addiction). Furthermore, Fig. 4 shows 80 percent of respondents genuinely care about 50 percent or less of the people they follow on social media.

Looking at time consumption habits, we see that the majority of respondents spend less than 30 minutes messaging others through social media per day (Fig. 6) but the large majority of respondents spend at least 1 hour looking at posts and almost half the respondents spend at least 2 hours (Fig. 5). This shows that even though posts take up the majority of respondents' usage time on social media, it is still not as important as messaging when it comes to deterrents of quitting social media.

Lastly, we see in Fig. 7 that approximately one third of respondents report social media as being a significant communication channel with their friends and family.
Looking at the distributions of the vignette questions, we can start to analyze if there were significant treatment effects for gender and which aspect of social media the vignette subject misses out on.

Conducting Chi-squared tests comparing the proportions of each treatment set, we find there is a significant difference in proportions across the message versus post treatment for both Alexa and Nick (Fig. 8). However, there is not a significant difference in proportions across the Alexa versus Nick treatment for either message or post.

This supports the respondents explicit answer of messaging being the largest deterrent to quitting social media by showing that respondents feel worse after uninstalling social media and missing a message than missing posts. It also starts to show that there is no gender affect in how respondents view deterrents to quitting social media.

Looking at the distribution of the second vignette question asking if respondents would recommend keeping social media uninstalled, we see the following:

These results in Fig. 9 align with the multiple-choice responses as well as the first vignette. Conducting a 2-proportion t-test we find there is a significant difference in proportions across the message versus post treatment for both Alexa and Nick and once again there is not a significant difference in proportions across the Alexa versus Nick treatment for either message or post.

V. Results

Running the series of OLS regressions on Y_i (if the respondent felt positive about uninstalling social media) gives the following results:

From the first regression in Table 1 we observe results in line with the proportion tests, showing that relative to the excluded Nick/Message treatment, both the Alexa/Post and Nick/Message treatments have a positive and significant coefficient. This means that respondents felt more positive about the decision to uninstall social media after missing posts for both genders relative to Nick missing a message.

Regression 2 adds the respondent's sex and ethnicity and we observe there is not a significant coefficient on sex, meaning that on average men and women feel equally positive about the decision to uninstall social media, holding other factors constant. We also observe that on average respondents of Asian ethnicity feel less positive and respondents of mixed race or who fall into the "other" category feel more positive about the decision to uninstall social media relative to White respondents.

Regression 3 adds interaction terms between respondent's sex and vignette treatment, and we observe a significant negative coefficient on the term for a male answering the Alexa/Message vignette. We also see that the base Alexa/Message treatment variable now has a significant positive coefficient. These coefficients are roughly approximate in size so they cancel out for male survey respondents, meaning for men there is no difference between the Nick/Message and Alexa/Message treatment. However, women are left with the positive coefficient on Alexa/Message meaning they feel more positive for Alexa than Nick about the decision to uninstall social media after missing a message.

Regression 4 adds the binary variables created from the multiple-choice questions and we see a significant negative coefficient for individuals who spend more than 2 hours per day looking at posts. This means that respondents who are more heavy users of social media felt less positive about the decision to uninstall social media than respondents who spend less than 2 hours looking at posts.

Now looking at the series of regressions on Y_j (if the respondent would recommend keeping social media uninstalled) we get the following results:

From the first regression in Table 2 we again observe results in line with the proportion tests, showing that relative to the excluded Nick/Message treatment, both the Alexa/Post and Nick/Message treatments have a positive and significant coefficient. This means that on average respondents are more likely to recommend keeping social media uninstalled after missing posts for both genders relative to Nick missing a message.

Regression 2 adds the respondent's sex and ethnicity, and we observe there is not a significant coefficient on sex, meaning that on average men and women are equally likely to recommend

keeping social media uninstalled, holding other factors constant. We also observe that on average respondents of Asian ethnicity are less likely to recommend keeping social media uninstalled relative to White respondents.

Regression 3 adds interaction terms between respondent's sex and vignette treatment and here we observe a marked difference from Y_i in that none of the interaction terms have significant coefficients, meaning the sex of respondents did not affect how they answered each vignette treatment.

Regression 4 adds the binary variables created from the multiple-choice questions and we also see a difference from Y_i in that none of multiple choice variables had significant coefficients. These differences and similarities between Table 1 and Table 2 tell us multiple things. In both Yi and Y_j, the treatment of whether a subject missed a message or missed posts was always a significant factor across gender. On the other hand, the treatment of whether a subject was male or female was rarely a significant factor across gender for either Y_i and Y_j. This means that whether a subject missed a message vs missed posts affected both the respondent's happiness with the decision to uninstall social media and their likelihood to keep the apps uninstalled while the gender of the subject did not affect either.

It is also important to note that not all factors which lead respondents to feel more or less positive about uninstalling social media actually play a role in whether a respondent recommends keeping social media uninstalled. For instance, in this study we find that spending 2 or more hours per day looking at posts makes respondents less happy on average with the decision to uninstall social media but does not affect their likelihood of recommending keeping it uninstalled.

VI. Conclusion

This paper analyzes survey data collected from a group of students in the United States between the ages of 19 to 24 which asked explicit questions about their social media habits as well as asked them to react to hypothetical scenarios. I find that respondents explicitly state that direct messaging through social media is a larger deterrent to quitting social media than missing posts, even though respondents spend a significantly less amount of time messaging than looking at posts. I also find that across peer and respondent gender, respondents feel worse after a peer hypothetically misses a message after uninstalling social media than missing posts from their friends. Respondents are also more likely to recommend keeping social media uninstalled across peer and respondent gender after a peer misses posts from friends than a message. Furthermore, I find that neither the gender of the respondent nor of a peer plays a significant role in which features of social media dominate the inability to leave the apps. These results support that across gender, losing messaging abilities through social media is the dominant force behind addiction rather than losing access to the posts hosted on the apps.

The implications of this study are important for both users of social media as well as social media companies themselves. For users, it is important to understand the distinction between

the enjoyable aspects of social media and the aspects which implicitly trap them in the continual use of the service. Understanding that messaging is the dominant feature in the reluctance to decrease social media use will allow users to make intentional decisions to substitute their communication channels away from social media to other options such as standard text messaging. Without that exit barrier, users may have a greater ability to efficiently use social media and prevent overuse by focusing solely on the amount of post content they want to consume, which is what users describe as their favorite aspect of social media to begin with.

The findings are also important for the social media companies, for whom it is imperative to their growth and survival to understand what keeps their user base on their platform. Understanding that direct messaging is the dominant force of user retention, companies can dedicate a portion of their focus on their messaging systems and how to upgrade them. An example of such an upgrade is Meta's click-to-message ads, which take customers straight into a direct message with the advertising company when clicked. As more is learned about the value of direct messaging between regular users, similar campaigns can be developed which are not targeted at business applications but rather casual interaction between users.

An area for future research is the extent of which new online habits developed during the Covid-19 lockdown are reverting to pre-Covid-19 levels. For example, during the lockdown online food delivery services famously increased in utilization as did the number of individuals working from home. Understanding if changes like these are complementary developments to other areas of screen time (social media usage, streaming, etc.) and whether or not the increases seen during the lockdown are now decreasing is important to understanding the digital ecosystem and the staying power of technology once it is introduced.
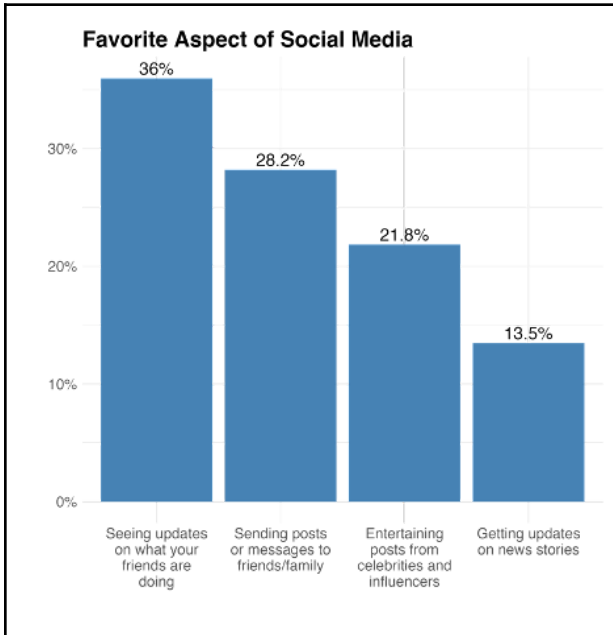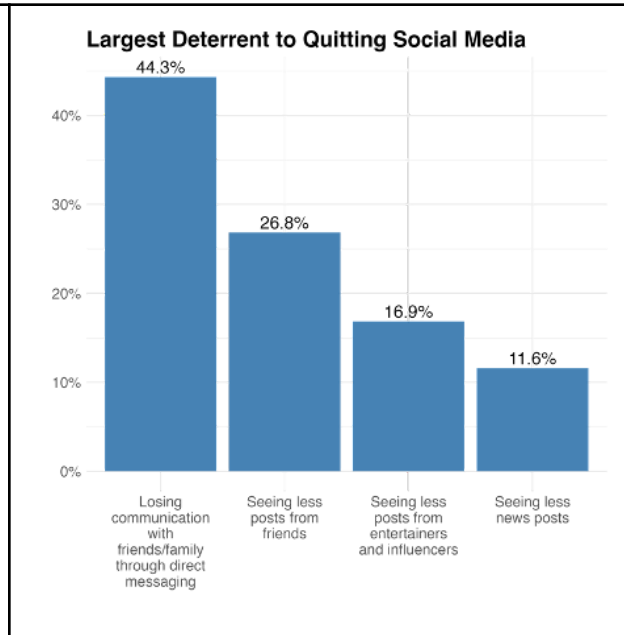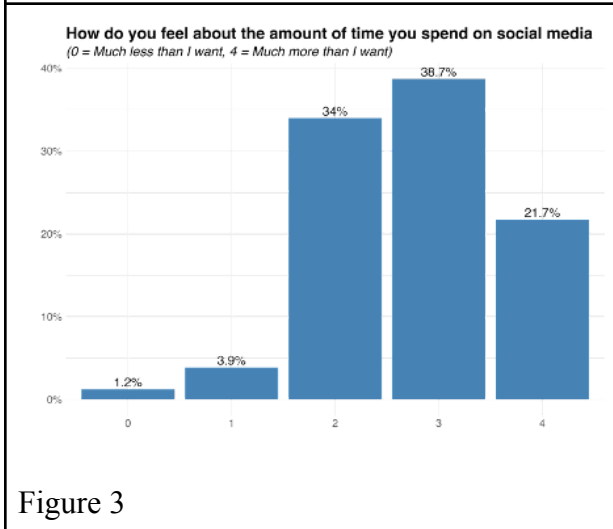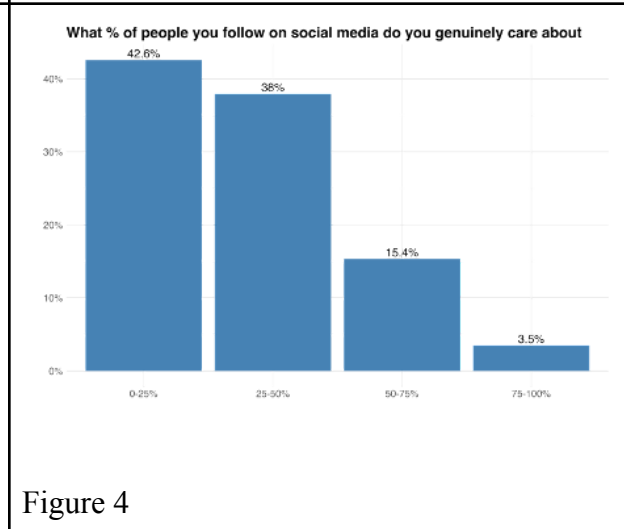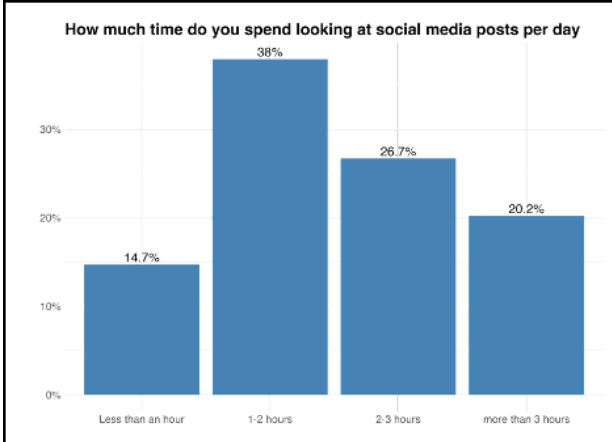
VI. Appendix

Figure 1

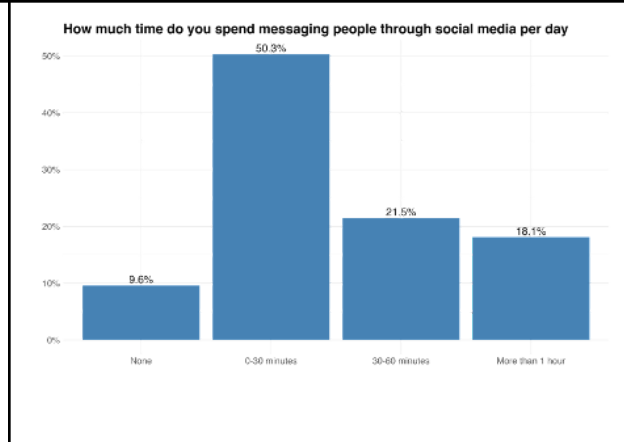Figure 2

Figure 3

Figure 4

Figure 5

Figure 6
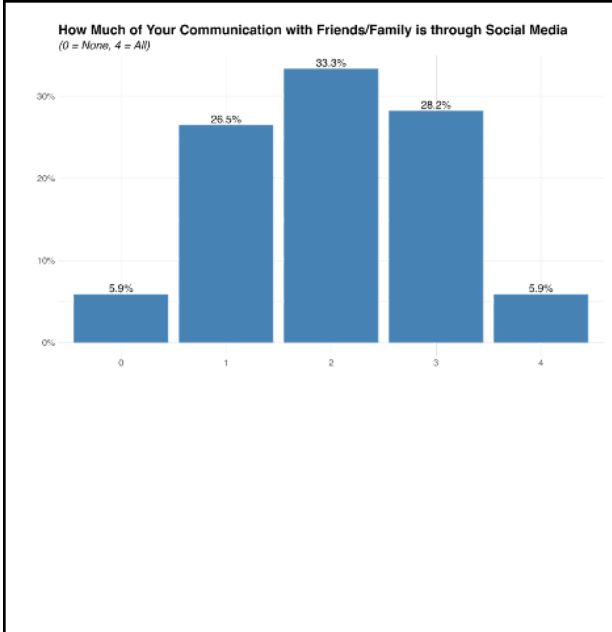
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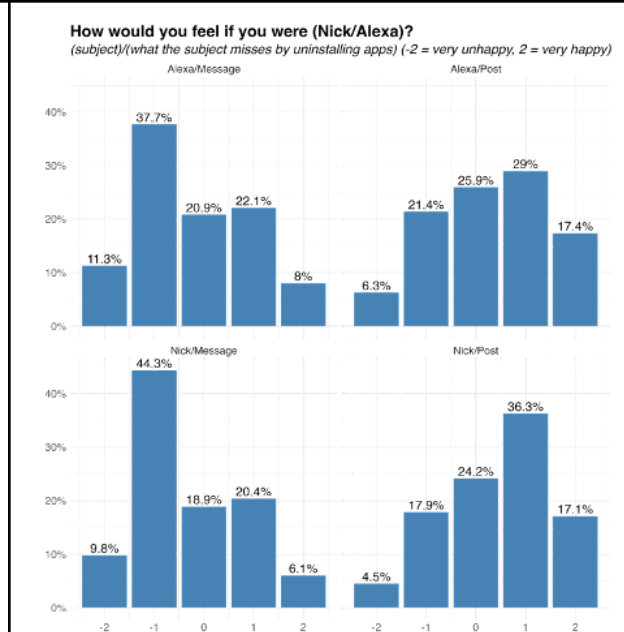
Figure 8

Figure 9
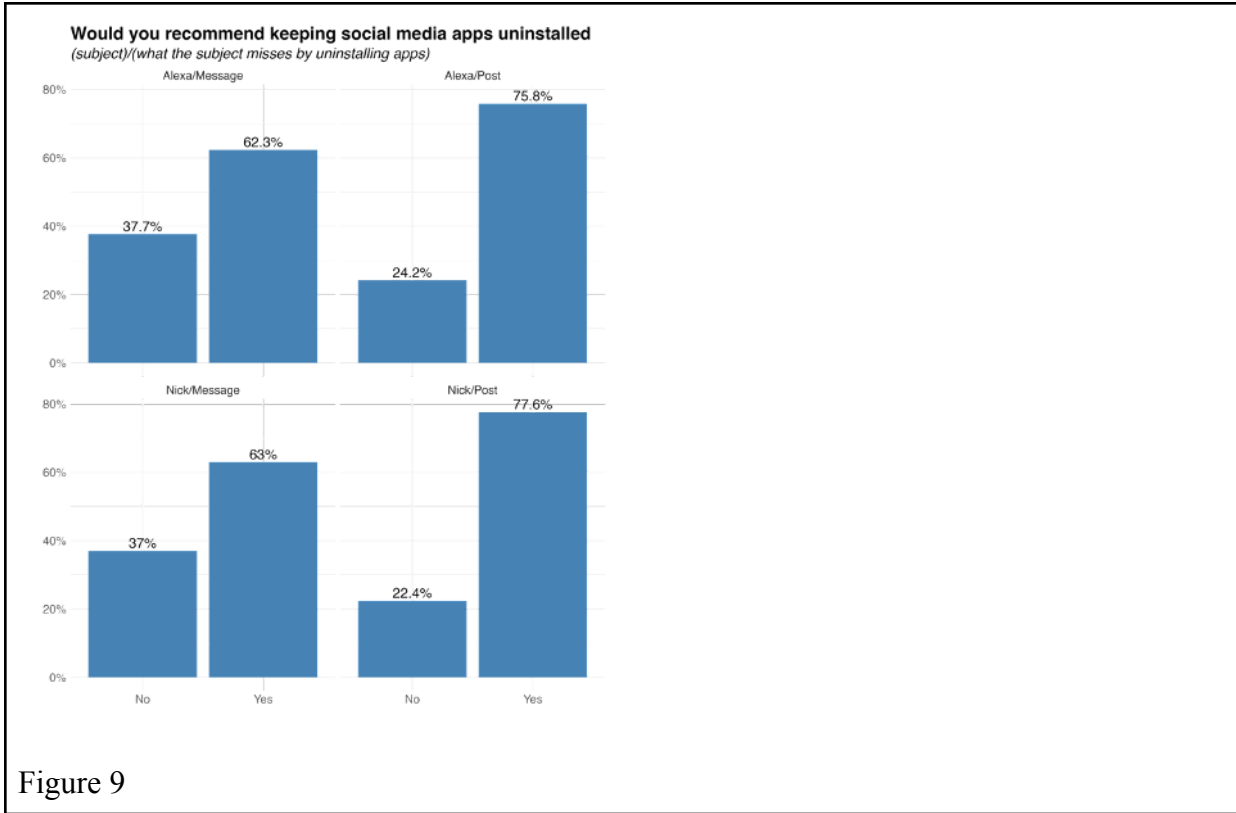
Tables:

Table 1

Predictors	1 Estimates	2 Estimates	3 Estimates	4 Estimates
(Intercept)	0.27 *** (0.02)	0.26 *** (0.03)	0.23 *** (0.03)	0.25 *** (0.04)
Alexa/Post Treatment	0.20 *** (0.03)	0.20 *** (0.03)	0.23 *** (0.05)	0.23 *** (0.05)
Alexa/Message Treatment	0.03 (0.03)	0.03 (0.03)	0.10 * (0.05)	0.11 * (0.05)
Nick/Post Treatmet	0.26 *** (0.03)	0.26 *** (0.03)	0.26 *** (0.05)	0.26 *** (0.05)
Male		0.01 (0.02)	0.06 (0.05)	0.06 (0.05)
Black		0.08 (0.04)	0.08 (0.04)	0.09 * (0.04)
Mixed Race/Other		0.09 ** (0.03)	0.09 ** (0.03)	0.10 ** (0.03)
Asian		-0.09 ** (0.03)	-0.09 ** (0.03)	-0.09 * (0.04)
Male*Alexa/Post			-0.06 (0.07)	-0.06 (0.07)
Male*Alexa/Message			-0.14 * (0.07)	-0.14 * (0.07)
Male*Nick/Post			0.00 (0.07)	0.00 (0.07)
Time spent looking at posts				-0.05 * (0.03)
Time spent messaging				-0.04 (0.03)
% of followed accounts cared about				-0.02 (0.02)
Addiction				0.03 (0.03)
% of communication through social media				0.02 (0.03)
Favorite aspect				0.05 (0.03)
Largest deterrent				-0.02 (0.03)
Observations	1584	1584	1584	1584
R^2 / R^2 adjusted	0.051 / 0.049	0.064 / 0.060	0.067 / 0.061	0.074 / 0.064

* $p<0.05$ ** $p<0.01$ *** $p<0.001$

Table 2

Predictors	1 Estimates	2 Estimates	3 Estimates	4 Estimates
(Intercept)	0.63 *** (0.02)	0.62 *** (0.03)	0.63 *** (0.03)	0.64 *** (0.04)
Alexa/Post Treatment	0.13 *** (0.03)	0.13 *** (0.03)	0.13 ** (0.05)	0.13 ** (0.05)
Alexa/Message Treatment	-0.01 (0.03)	-0.01 (0.03)	0.00 (0.05)	0.00 (0.05)
Nick/Post Treatmet	0.15 *** (0.03)	0.15 *** (0.03)	0.12 ** (0.04)	0.12 ** (0.04)
Male		0.04 (0.02)	0.03 (0.05)	0.03 (0.05)
Black		-0.01 (0.04)	-0.01 (0.04)	-0.00 (0.04)
Mixed Race/Other		0.06 (0.03)	0.06 (0.03)	0.06 (0.03)
Asian		-0.13 *** (0.03)	-0.13 *** (0.03)	-0.12 *** (0.03)
Male*Alexa/Post			0.00 (0.06)	-0.00 (0.06)
Male*Alexa/Message			-0.02 (0.06)	-0.02 (0.06)
Male*Nick/Post			0.06 (0.06)	0.06 (0.06)
Time spent looking at posts				-0.02 (0.02)
Time spent messaging				-0.03 (0.03)
% of followed accounts cared about				-0.02 (0.02)
Addiction				0.03 (0.02)
% of communication through social media				-0.05 (0.03)
Favorite aspect				-0.02 (0.03)
Largest deterrent				0.04 (0.03)
Observations	1584	1584	1584	1584
R^2 / R^2 adjusted	0.024 / 0.022	0.038 / 0.033	0.039 / 0.032	0.046 / 0.036

$* p<0.05 \quad ** p<0.01 \quad *** p<0.001$

Miscellaneous:

Naming vignette subjects:

When choosing the names for the subjects of the vignette, I chose to use the names Nick and Alexa because they implicitly dictate the ethnicity of each subject to be white and avoid confounding the gender treatment with ethnicity.

Balancing detail and bias within the vignettes:

One of the main concerns around writing the vignettes was the balance between creating a captivating scenario which respondents could picture the details of and imagine themselves or their friends in, while also not adding so much detail that the vignette becomes biased and leads respondents to a certain answer. I decided to exclude details like what the subject spent their time on social media looking at and whether the student was struggling academically in order to avoid making the scenario overly strong towards individuals supporting uninstalling social media.

Changing from pilot study

When reviewing the results of the pilot study, it was brought to my attention that it is difficult to interpret a Likert scale on the question:

If you were [Alexa's/Nick's] friend, would you recommend keeping the apps uninstalled? (2 = strongly recommend, -2 = strongly advise against)

To give the question a straightforward interpretation, I changed the response set to yes/no for the final version of the survey, as follows:

If you were [Alexa's/Nick's] friend, would you recommend keeping the apps uninstalled? (yes/no)

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