

## 02.145TS - Surveys and Experiments in the Social Sciences

A Study on How Personality Drives Social Media Use and  
Its Subsequent Effects on Loneliness

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# Introduction - What is Social Media?

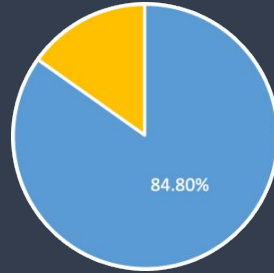


- Any interactive communication channel that allows for two-way interaction and feedback (Kent, 2021)

# Introduction - Why Social Media?



- Growing influence of social media over the past few decades



- 84.8% of Singaporeans are social media users (Ng, 2021)



- Aid in daily interaction
- Improve communications
- Availability of resources

# Introduction - Why Social Media?



- Many studies done on how social media influences various aspects of our lives



- Review of 79 Studies: Social Media Use and Mental Health and Well-Being Among Adolescents (Schønning, 2020)



- Lack of studies on how personality played a role in social media influence

# Literature Review

## Personality difference on social media usage (Extroverts vs Introverts)



- Crave to connect with people (Dhar & Jha, 2014)
- Seek connection with others (Harbaugh, 2010)



- Express themselves more comfortably unlike in face-to-face interactions (Voorn & Kommers, 2013)

- More extroverted users tend to spend more time on Facebook (Harbaugh, 2010)
  - New social media platforms like Tik Tok have risen in popularity and acquired a large user base (Auxier & Anderson, 2021)

H1: Extroverts report higher levels of SMU compared to Introverts

# Literature Review

## Effect of social media usage on loneliness



- It is not uncommon for people to feel “disconnected” from others although social media has become a significant part of their lives (Bognanno, 2019).
- As we excessively use social media, feelings of rejection and loneliness might also become more prominent (Knispel, S., 2020).
- **Connection overload:** when the demands of maintaining and updating social media have detrimental effects on a person’s life (LaRose et al, 2014)
- **Displacement hypothesis:** online communication takes up time that could be used for interaction with friends, dropping the quality of friendships (Valkenburg & Peter, 2007)

H2: Frequency of SMU is positively associated with loneliness

# Literature Review

## Effects personality has on loneliness through social media usage



- Extroverted social media users tend to have more social media usage as compared to introverts, using social media as a way to reach out to others
- There is a lack of research regarding how factors such as the personality of an individual affect their social media usage
- We will investigate how personality, specifically level of extroversion, affects the loneliness of a person through the difference in the frequency of their social media usage



RQ: The effect of level of extroversion on loneliness is mediated  
through frequency of SMU



# Methods

## UCLA Loneliness scale

- How often do you feel that you are “in tune” with the people around you?
- How often do you feel that you lack companionship?
- etc.

Likert-type scale measurement

## BFI Questionnaire (Extroversion)

- I see myself as someone who...
  1. Is talkative
  2. Is reserved
  3. Is full of energy
  4. etc.

Likert-type scale measurement

## Ahn & Shin 2013 (Social Media Usage)

- On an average day, how much time do you spend on posting/commenting on social networking sites such as Facebook, Twitter, Instagram, TikTok?
- etc.

Likert-type scale measurement





# Variables and Sampling

## Variables

- Level of Loneliness (Dependent variable) (LONE)
- Time Spent on Social Media (Mediator) (SMU)
- Level of Extroversion (Independent variable) (LOE)

## Control Variables

- Gender
- Age

## Sampling method and population

- Convenience Sampling
- Sample pool : Individuals from Singapore University of Technology and Design (SUTD)

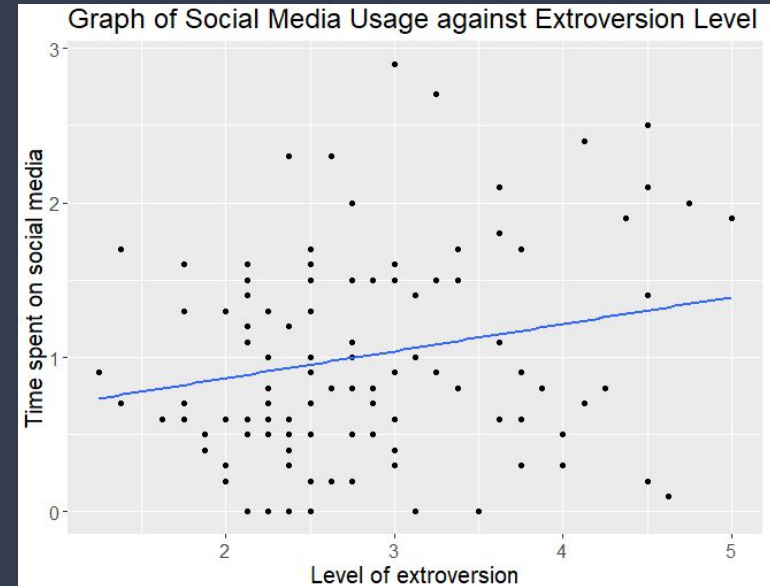


# Results

114 data collected, 113 used in analysis

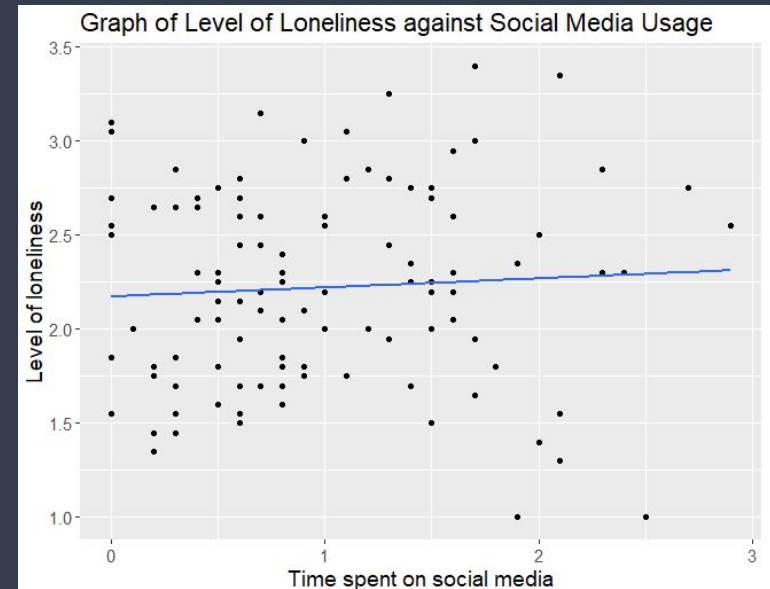
# H1: Extroverts report higher levels of social media usage compared to Introverts

- Hierarchical multiple regression
- LOE proved to have a significant & positive effect on an individual's SMU (at .05 level of significance)
- H1 is supported



## H2: Frequency of social media use is positively associated with loneliness

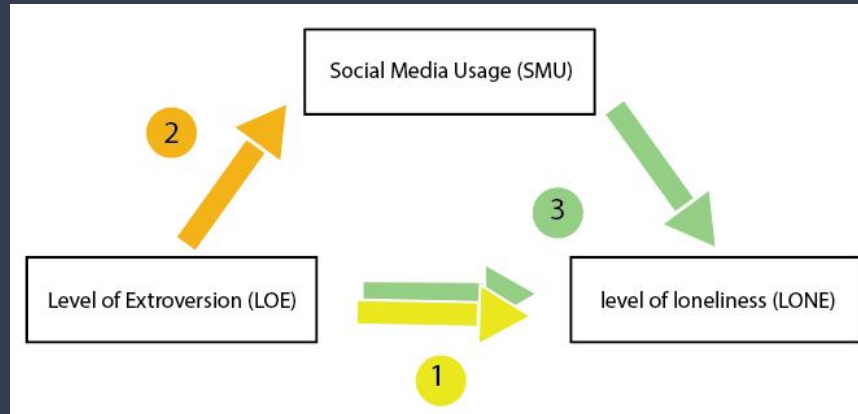
- Hierarchical multiple regression
- SMU does not prove to have a significant effect on an individual's LONE (at 0.05 level of significance)
- H2 is not supported



**RQ:** The effect of level of extroversion on loneliness is mediated through frequency of social media usage

Perform mediation analysis

- Step 1: Find the total effect that LOE has on LONE
- Step 2: Find the relationship between LOE and SMU
- Step 3: While controlling for LOE (IV), find the effect of SMU (mediator) on LONE (DV)



# Mediation Analysis

## Step 1:

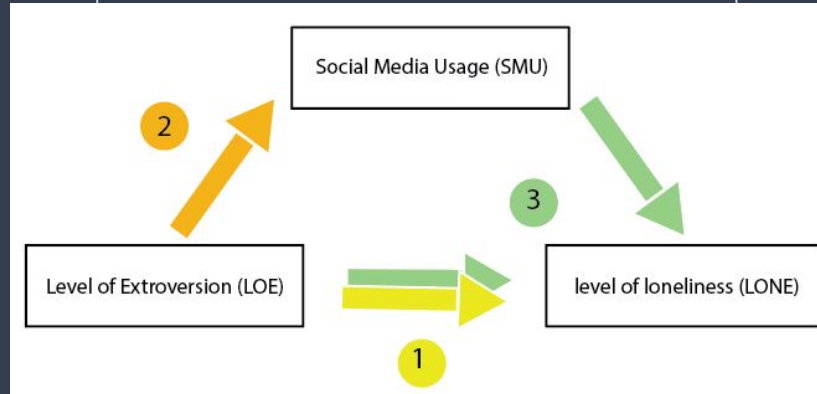
- LOE proved to have a significant & negative effect on an individual's LONE (at 0.05 level of significance)
- Conclude that there is a significant total effect

## Step 2:

- Conclude that LOE is positively correlated with SMU from H1

## Step 3:

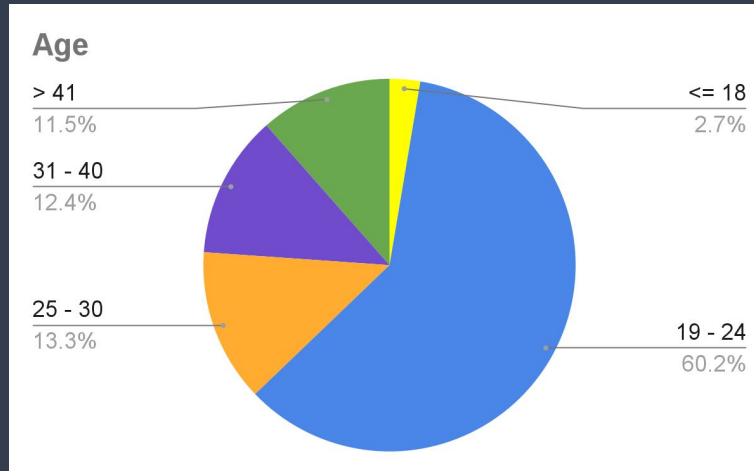
- After controlling for age, gender and LOE, SMU does not prove to have a significant effect on LONE (at 0.05 level of significance)
- LOE completely predicts for LONE



Conclusion:  
SMU does not mediate  
between LOE and LONE

# Discussions

- Cronbach's alpha test for reliability of our measurement of social media usage = 0.67 ( $<0.7$ )
- Demographic of age of participants  $\neq$  Demographic or target audience
  - Extroverts had higher levels of social media usage as compared to introverts



# Discussions



- We cannot conclude that there is any correlation to an individual's social media usage with how lonely they feel



- We conclude that social media usage does not mediate between level of extroversion and levels of loneliness as H2 is not supported



# Potential Limitations



- Under-representation of subgroups in population sample
- Participants might not have answered the survey questions honestly
- Levels of loneliness can be affected by other variables
- Study is not longitudinal
- Social Media Usage (SMU) measure not very reliable, further replications of the study needed

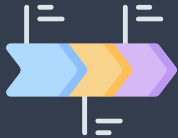
# Proposed Solutions



- Increase the scope of the project to gather data from Singaporeans of a wider age group



- Make a study to ask participants on the amount of social media usage and their loneliness level on a daily basis



- Conduct the survey over a period of time for a longitudinal comparison



# The End



# Hypotheses

- H1: Extroverts report higher levels of social media usage compared to Introverts
- H2: Frequency of social media use is positively associated with loneliness

RQ: The effect of level of extroversion on loneliness is mediated through frequency of social media usage



# Methods

- Survey in the form of multiple questions to assess 3 main variables: time spent on social media, levels of loneliness the participants are experiencing, and whether they are extroverted or introverted.
  - UCLA Loneliness Scale (version 3) to test for loneliness, BFI questionnaire for extraversion/introversion
- Sampling method: Convenience sampling
- Sample pool: Individuals from Singapore University of Technology and Design (SUTD) where we are expecting the pool of participants to consist of mostly undergraduate and master's students



# Survey Questionnaire

Loneliness related questions:

- How often do you feel that you are “in tune” with the people around you?
- How often do you feel that you lack companionship?
- How often do you feel that there is no one you can turn to?
- How often do you feel alone?
- Etc.

Measured on a scale that ranges from 1 - 4:

- 1: “Never”, 2: “Rarely”, 3: “Sometimes”, 4: “Always”



# Survey Questionnaire

## Big Five Inventory Questions on Extroversion:

- I see myself as someone who...
  1. Is talkative
  2. Is reserved
  3. Is full of energy
  4. Generates a lot of enthusiasm
  5. Tends to be quiet
  6. Has an assertive personality
  7. Is sometimes shy, inhibited
  8. Is outgoing, sociable

Measured on a scale of 1 to 5 (disagree strongly to agree strongly), questions 2, 5 and 7 are reverse scored



# Survey Questionnaire

## Questions on Social Media Usage

- On an average day, how much time do you spend on posting/commenting on social networking sites such as Facebook, Twitter, Instagram, TikTok?
- On an average day, how much time do you spend on using the instant messaging function found on social media platforms like Facebook Messenger, Instagram Direct Message, or TikTok Direct Message?
- On an average day, how much time do you spend using Facebook/Instagram video chat, Facebook/Instagram live, or sharing short clips (stories) with others on social media platforms like Facebook/Instagram/TikTok?
- On an average day, how much time do you spend viewing videos shared on social media platforms like Facebook/Instagram/TikTok Feed/Youtube?
- On an average day, how much time do you spend on reading posts/news on social media platforms like Facebook/Instagram/TikTok?

## Likert-type scale measurement ranging 0 to 4.5

- (0) “Never”, (0.5) “less than one hour”, (1.5) “about one to two hours”, (2.5) “about two to three hours”, (3.5) “about three to four hours”, (4.5) “more than four hours”





# Methods

- Survey
  - UCLA Loneliness Scale (Version 3)
  - BFI Questionnaire ( Extroversion Level)
  - Ahn & Shin 2013 ( Social Media Usage)
- Convenience Sampling
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# Survey Questionnaire

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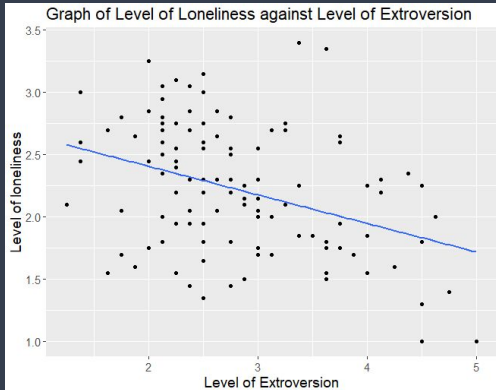
# Reliability of scales: Cronbach's alpha test

- Level of Loneliness (LONE): 0.93
- Social Media Usage (SMU): 0.67 (<0.7, Not very reliable)
- Level of Extroversion (LOE): 0.85

# Mediation Analysis

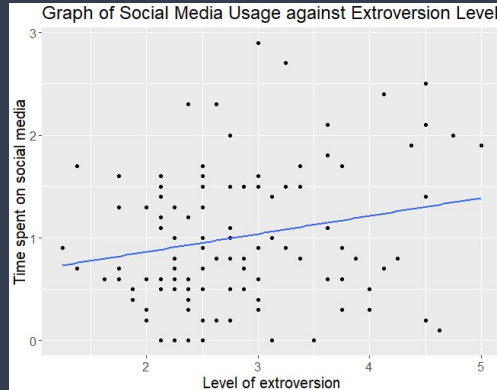
## Step 1:

- LOE proved to have a significant & negative effect on an individual's LONE (at 0.05 level of significance)
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- Conclude that LOE is positively correlated with SMU from H1



## Step 3:

- After controlling for age, gender and LOE, SMU does not prove to have a significant effect on LONE (at 0.5 level of significance)
- LOE completely predicts for LONE

Conclusion:  
SMU does not mediate  
between LOE and LONE

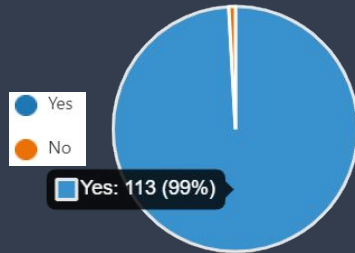
# Descriptive statistics

## Demographic characteristics of participants:

### Social Media User

Yes: 113 (99.1%)

No: 1 (0.9%)

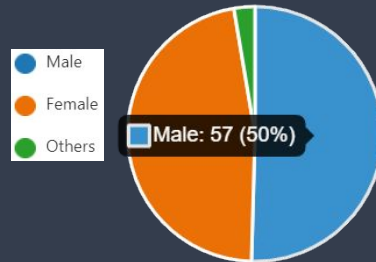


### Gender

Male: 57 (50.4%)

Female: 53 (46.9%)

Others: 3 (2.7%)



### Age Group

Below 18 year old: 3 (2.7%)

19-24 year old: 68 (60.2%)

25-30 year old: 15 (13.3%)

31-40 year old: 14 (12.4%)

41 year old and above: 13 (11.5%)

