

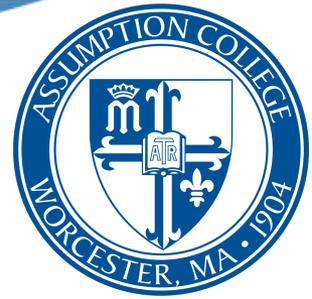
College Smartphone Dependency: Relationships Between Social- Emotional Well-Being and Personality

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Smartphone Use & Mental Health

- The use of technology has become an integral part of daily life for many Americans, especially adolescents and young adults (Smith, 2015)
- Technology has become more readily available and easier to use
- Preliminary data shows an increasing trend of college age students having an excessive reliance on smartphones
 - There is some indication that the frequency and dependency on smartphones show cognitive and behavioral patterns similar to other addictive disorders (Lee, Ahn, Choi, & Choi, 2014; Mok et al., 2014)

Smartphone Use & Mental Health

- Research over the past few years has begun to explore possible relationships between smartphone use and a variety of indicators of mental health, especially among traditional college age students
 - Areas of focus have included:
 - Interpersonal relationships, including loneliness (Tan, Pamuk, & Donder, 2013; Bian & Leung, 2015)
 - Depression, anxiety, and sleep quality (Adams & Kisler, 2013; Demirci, Akgonul, & Akpinar, 2015; Thomee, Harenstam, & Hagberg, 2011)
 - Personality traits (Gu, Xi, Cheng, Wu, & Wang, 2014; Kim et al., 2014; Kotov, Gamez, Schmidt, & Watson, 2010; Lee, Tam, & Chie, 2013)

Hypotheses

- This study examined the relationship between smartphone dependency, social-emotional well-being, and personality traits in college students
- **Hypothesis 1:** Students with high levels of smartphone dependency will be more prone to lower levels of social-emotional well-being than those with low levels of smartphone dependency
- **Hypothesis 2:** Smartphone dependency will predict “clinical” levels of social-emotional well-being
- **Hypothesis 3:** The relationships between smartphone dependency and indices of social-emotional well-being will be moderated by specific personality traits

Method

- **Participants & Procedure**
 - 150 college students ($M = 19.28$ years) in a small liberal arts college in the Northeast
 - 83.2% Female
 - 80.5% White; 7.4% African-American; 4.7% Latino; 4.7% Asian; 2.7% Bi-racial
 - Participants completed a series of questionnaires on PsychData

Measures

Smartphone Addiction Scale (SAS)

- 33-item self-report scale designed to measure an individual's index of smartphone addictive behavior for those 18 years of age and older (Kwon et al., 2013)
 - Relatively new scale – internal consistency (Cronbach's alpha = 0.967) and concurrent validity verified
 - 6-point Likert Scale (1 = Strongly Disagree; 6 = Strongly Agree)
- Six Subscales
 - **Daily life disturbance (5Q; 0.858)** – includes missing planned work, having a hard time concentrating in class or while working, suffering from light-headedness or blurred vision, pain on the wrists or at the back of the neck, and sleep disturbance
 - **Positive anticipation (8Q; 0.913)** – feeling excited about and getting rid of stress with smartphone use

Measures

- **Six Subscales (cont.)**
 - **Withdrawal (6Q; 0.876)** – being impatient, fretful, and intolerable without a smartphone, constantly having one's smartphone in one's mind even while not using it, never giving up one's smartphone, and becoming irritated when bothered while using one's smartphone
 - **Cyberspace-oriented relationship (7Q; 0.904)** – feeling that one's relationships with his/her friends obtained through a smartphone are more intimate than his/her relationships with his/her real-life friends, experiencing an uncontrolled feeling of loss when not able to use one's smartphone, and consequently constantly checking one's smartphone

Measures

- **Six Subscales (cont.)**
 - **Overuse (4Q; 0.825)** – uncontrollable use of one's smartphone, preferring to conduct searches using one's smartphone to asking help from other people, always preparing one's charging pack, and feeling the urge to use one's smartphone again right after one stopped using it
 - **Tolerance (3Q; 0.865)** – always trying to control one's smartphone use but always failing to do so

Measures

Outcome Questionnaire-45 (OQ-45)

- 45-item self-report scale used to estimate an individual's index of mental health functioning for those 18 years of age and older (Lambert, Kahler, Harmon, Burlingame, & Shimokawa, 2011)
- **Total Score and 3 Subscales**
 - **Symptom distress** – reflects symptoms of anxiety disorders, affective disorders, adjustment disorders, and stress related disorders
 - **Interpersonal relations** – complaints of loneliness, conflicts with others, family and marriage problems
 - **Social role** – difficulties in the social role of worker, homemaker, or student

Measures

Neuroticism-Extraversion-Openness Five-Factor Inventory-3 (NEO-FFI-3)

- 60-item short-version self-report scale of the NEO-PI for those 12 years of age and older (Costa & McCrae, 2010)
- **Five Domains**
 - **Neuroticism**
 - **Extraversion**
 - **Openness**
 - **Agreeableness**
 - **Conscientiousness**

Measures

UCLA Loneliness Scale-3 (UCLA-LS-3)

- 20-item self-report scale designed to measure an individual's subjective feelings of loneliness as well as feelings of social isolation and shyness people may experience in specific situations (Russell, 1996)
- 4-point Likert scale (1 = Never, 4 = Always)
- Demonstrates internal consistency across samples (i.e., college students, nurses, teachers, and the elderly) ranging from 0.89 to 0.94 and test-retest reliability of 0.73 over a one-year period

Measures

Pittsburgh Sleep Quality Index

- 19-item self-report measure that assesses sleep quality and sleep disturbances over the past month (Buysse et al., 1989)
- There are seven components to the PSQI: subjective sleep quality, sleep latency, sleep duration, habitual sleep efficiency, sleep disturbances, use of sleeping medications, and daytime dysfunction
- The component scores add up to a global score (range 0-21) as an indicator of overall sleep quality
 - Scores greater than 5 are indicative of a significant sleep disturbance
- In healthy controls, the global score had an internal consistency of 0.83

Results

<u>SAS</u>	OQ Symptom Distress	OQ Interpersonal Relations	OQ Social Role	OQ Total
Life Disturbance	.350**	.231**	.408**	.374**
Positive Anticipation	.075	.156	.166*	.127
Withdrawal	.241**	.210**	.179*	.254**
Cyber-Relationship	.140	.230**	.131	.186*
Overuse	.138	-.056	.120	.095
Tolerance	.265**	.227**	.308**	.299**
Total	.283**	.249**	.309**	.318**

<u>SAS</u>	UCLA Loneliness
Life Disturbance	.228**
Positive Anticipation	.188*
Withdrawal	.240**
Cyber-Relationship	.304**
Overuse	.075
Tolerance	.236**
Total	.313**

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

**Correlation significant at the 0.01 level (2-tailed)

- Smartphone dependency positively correlated with all OQ scales and the UCLA Loneliness scale

Results

SAS	NEO Neuroticism	NEO Extraversion	NEO Openness	NEO Agreeableness	NEO Conscientiousness
Life Disturbance	.296**	-.060	-.034	.007	-.234**
Positive Anticipation	.133	-.211**	-.173*	-.203*	-.059
Withdrawal	.253**	-.088	-.273**	-.223**	-.203*
Cyber-Relationship Overuse	.260**	-.149	-.229**	-.132	-.067
Tolerance	.246**	-.084	-.107	-.089	-.206*
Total	.340**	-.198*	-.223**	-.162*	-.194*

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

**Correlation significant at the 0.01 level (2-tailed)

- Smartphone dependency positively correlated with neuroticism
- Smartphone dependency negatively correlated with extraversion, openness, agreeableness, and conscientiousness

Results

<u>SAS</u>	PSQI Sleep Quality	PSQI Sleep Latency	PSQI Sleep Duration	PSQI Sleep Efficiency	PSQI Sleep Disturbances	PSQI Sleep Medications	PSQI Daytime Dysfunction	PSQI Global Score
Life Disturbance	.269**	.149	.183*	.252**	.333*	.247**	.284**	.404**
Positive Anticipation	.022	-.195*	.041	.040	.024	-.036	.087	-.021
Withdrawal	.150	-.066	.093	.085	.230**	.087	.110	.146
Cyber-Relationship	.006	-.190*	-.002	.061	.067	.071	.070	.003
Overuse	.038	-.017	-.003	.065	.090	.167*	-.033	.079
Tolerance	.176*	-.006	.180*	.152	.190*	.141	.184*	.227**
Total	.152	-.093	.112	.152	.218**	.151	.169*	.188*

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

**Correlation significant at the 0.01 level (2-tailed)

- Smartphone dependency positively correlated sleep disturbances, daytime dysfunction, and global score
- Of note, the SAS subscale life disturbance was positively correlated with the global score and all PSQI subscales, except for latency.

Results

SAS Total Predict OQ Total Clinical

- $X^2(1, 150) = 7.534, p < .01$
- SAS Total explained 6.9% of the variance in OQ Total Clinical
- SAS Total correctly classified 65.3% of the cases

SAS Total Predict OQ Symptom Distress Clinical

- $X^2(1, 150) = 12.142, p < .001$
- SAS Total explained 10.8% of the variance in OQ Symptom Distress Clinical
- SA Total correctly classified 65.3% of the cases

SAS Total Predict OQ Interpersonal Relations Clinical

- $X^2(1, 150) = 9.737, p < .01$
- SA Total explained 9.2% of the variance in OQ Interpersonal Relations Clinical
- SA Total correctly classified 72.0% of the cases

SAS Total Predict OQ Social Role Clinical

- $X^2(1, 150) = 14.376, p < .001$
- SA Total explained 12.3% of the variance in OQ Social Role Clinical
- SA Total correctly classified 63.3% of the cases

SAS Total Predict UCLA Loneliness {Top Half}

- $X^2(1, 150) = 8.112, p < .01$
- SA Total explained 7.1% of the variance in UCLA Loneliness
- SA Total correctly classified 62.7% of the cases

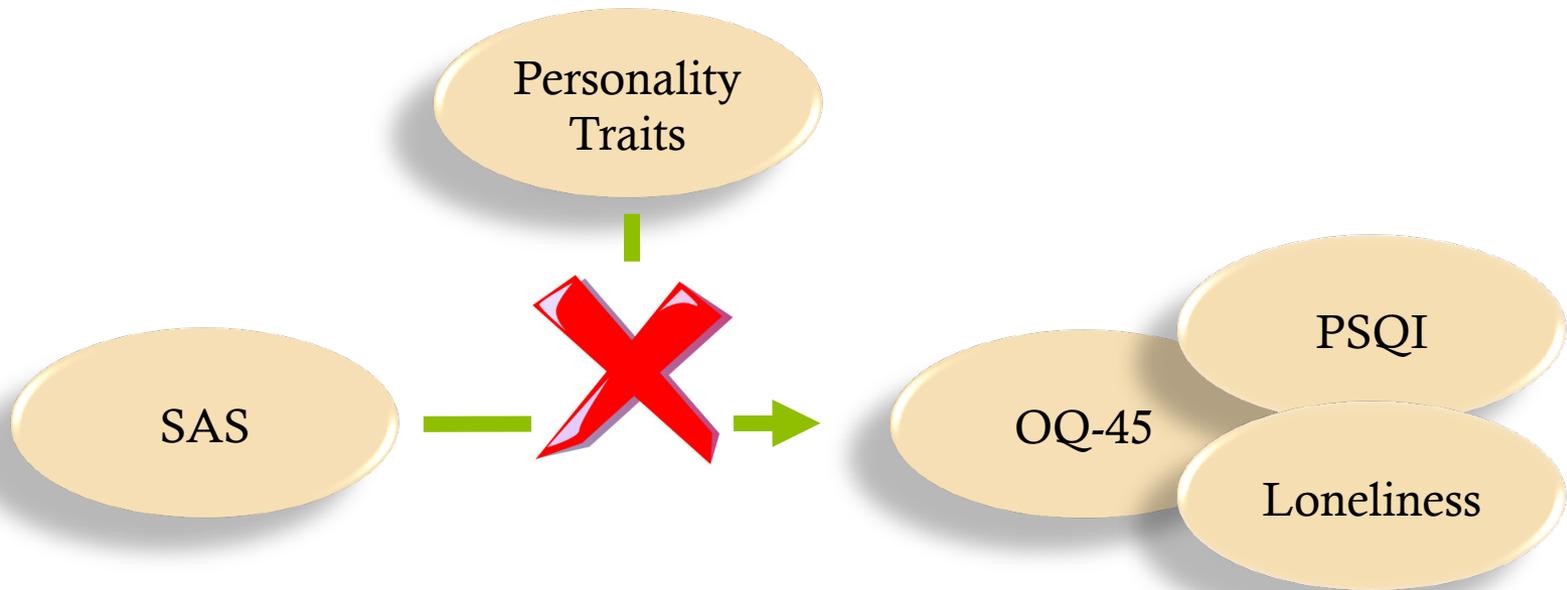
SAS Total Predict PSQI Global Score

- $X^2(1, 150) = 1.835, p = .176$
- SA Total explained 1.6% of the variance in PSQI Global Score
- SA Total correctly classified 57.3% of the cases

- Logistic regression analyses showed that the SAS was predictive of students who scored in the “clinical” range for the OQ-45 and those that reported above average loneliness scores
- SAS did not predict the PSQI global score

Results

- Multiple regression analyses did not indicate any moderating relationship with SAS, personality traits, and OQ-45 {and PSQI global score and loneliness}



Discussion

- **Hypotheses 1 & 2 – Supported**
 - The more students were dependent on using their smartphone, the higher their reported social-emotional distress
 - Smartphone dependency predicted “clinical” levels of social-emotional distress, including loneliness
 - Students with higher levels of smartphone dependency reported poorer sleep quality
 - However, smartphone dependency did not predict the PSQI global score
 - Personality traits were also associated with smartphone dependency
 - The more dependent on smartphone use, the higher levels of neuroticism
 - The less dependent on smartphone use, the higher levels of extraversion, openness, agreeableness, and conscientiousness
- **Hypothesis 3 – Not Supported**
 - No personality traits moderated the relationship between smartphone dependency and social-emotional distress

Discussion

- **Limitations**

- Lack of sample diversity/generalizability
 - Small liberal arts college population
 - 83.2% women
 - 80.5% white
- Data was collected via self-report – some studies have measured smartphone use with behavioral measures (e.g., tracking software; e.g., Lee et al., 2014)
- Caution on conclusions based on correlations
 - Directionality – e.g., smartphone dependency leads to mental health distress or mental health distress leads to smartphone dependency
 - Causal – many other factors associated with smartphone use and social-emotional wellbeing

Discussion

- **Future Directions**
 - More diverse college sample
 - Objective behavioral measures of actual smartphone use
 - Additional self-report measures for mental health distress
 - Perhaps target specific distress/disorders
 - May provide “better” predictive models
- **Practice/Clinical Implications**
 - Findings have the potential to inform interventions targeted at reducing/modifying smartphone use and improving college student mental health
 - SAS as a screening tool?
 - Psychoeducation of smartphone use
 - Discern what elements of smartphones are harmful *and beneficial*
 - If smartphone use is reduced, what will replace it?