



## Relative deprivation and phubbing: Fear of missing out as a mediator

Yang Wu<sup>1</sup>, Xiaoying Yang<sup>1</sup>

<sup>1</sup>School of Journalism and Communication, Luoyang Normal University, People's Republic of China

How to cite: Wu, Y., & Yang, X. (2021). Relative deprivation and phubbing: Fear of missing out as a mediator. *Social Behavior and Personality: An international journal*, 49(7), e10503

Phubbing, defined as paying attention to one's smartphone instead of interacting with other people in social contexts, has become a common phenomenon. However, the determinants of this behavior remain unclear. Therefore, we explored whether fear of missing out mediates the relationship between relative deprivation and phubbing. A sample of 858 college students completed measures to assess relative deprivation, fear of missing out, and phubbing. The results show that relative deprivation was positively correlated with phubbing. Further, fear of missing out fully mediated the relationship between relative deprivation and phubbing, which indicates that college students who perceived more relative deprivation tended to be more prone to experiencing fear of missing out, and thus more vulnerable to phubbing. Our findings extend understanding of the antecedents of phubbing from the individual microlevel to the psychosocial factor macrolevel.

### Keywords

relative deprivation;  
phubbing; fear of missing  
out; social interaction;  
smartphone use;  
psychosocial factors

With the widespread and rapid development of mobile technology, smartphones have become essential in people's everyday lives (Balta et al., 2020). According to the 46th Statistical Report on the Development of Internet in China (China Internet Network Information Center, 2020), as of September 29, 2020, the number of Internet users reached 940 million, of whom 99.2% were smartphone users. Nowadays, smartphone users generally prefer to use social media applications, such as WeChat or Facebook, rather than basic functions, such as making calls (Ergün et al., 2020). However, although smartphones can enhance long-distance social relationships and make it convenient to communicate almost anytime and anywhere, they can also interfere with face-to-face interactions (Kneidinger-Müller, 2019). Instead of actively engaging in social interactions, when a smartphone is present people may not maintain direct eye contact with the person in their company, instead reacting rapidly and attentively to smartphone alerts (Vanden Abeele & Postma-Nilsenova, 2018). This phenomenon of using smartphones while ignoring others during in-person social interactions is called *phubbing* or *technoference* (McDaniel & Drouin, 2019).

Recently, phubbing has drawn increased attention from researchers and has been studied in the context of several types of social relationships, such as romantic, parent-child, and peer relationships (Al-Saggaf & O'Donnell, 2019). Previous research has shown that phubbing can not only increase depressive symptoms (Wang et al., 2017), negative self-image (Ergün et al., 2020), and loneliness (Błachnio & Przepiorka, 2019), but also decreases satisfaction and intimacy in interpersonal relationships (Vanden Abeele et al., 2019). Phubbing can produce negative effects in almost all types of relationships; consequently, the risk factors that may increase phubbing need to be further investigated.

Predictors of phubbing include addiction to smartphones or related media, such as Internet games (Ivanova

et al., 2020; Karadağ et al., 2015), as well as low self-esteem, boredom, fear of missing out, and personality traits (Al-Saggaf & O'Donnell, 2019). However, previous studies have focused only on the microlevel individual perspective for understanding phubbing. Therefore, it is necessary to explore why individuals impulsively exhibit phubbing from the macrolevel perspective of psychosocial factors (Al-Saggaf & O'Donnell, 2019).

Phubbing has become common among young adults, including college students (Davey et al., 2018). As they are still transitioning to adulthood, college students may have poor self-control, and their easy access to social media applications may cause them to be more susceptible to overuse of these applications than are other age groups (Cudo et al., 2020). Thus, it is reasonable to speculate that college students could be prone to, and negatively affected by, phubbing behavior. In this study we examined relative deprivation, as an individual's subjective psychological perception of the macrosystem, and its relationship with phubbing.

## Theoretical Background and Hypothesis Development

### Relative Deprivation and Phubbing

*Relative deprivation* occurs when an individual feels deprived of deserved outcomes due to interpersonal or intergroup comparisons with certain reference groups, such as their friends (Smith et al., 2012). It is often described as leading to emotions such as anger, resentment, and frustration (Smith et al., 2012). Previous studies have found that relative deprivation can increase risky behaviors, such as gambling and Internet game addiction (Ding et al., 2018; Mishra & Meadows, 2018), and decrease mental health and prosocial behaviors (Callan et al., 2017). College students tend to conduct upward social comparisons; thus, they are more likely to experience relative deprivation compared to other age groups (Ding et al., 2018).

According to relative deprivation theory, interpersonal-level outcomes caused by relative deprivation include negative internal states (e.g., anxiety, depression) and individual behaviors (e.g., seeking to escape; Smith et al., 2012). Smartphone and social media addictions are forms of problematic cell phone use that are employed to escape negative emotions (Billieux, 2012). Al-Saggaf and O'Donnell (2019) suggested that phubbing is used in social settings to escape negative emotions caused by face-to-face interactions. Therefore, we proposed the following hypothesis:

**Hypothesis 1:** Relative deprivation will be positively correlated with phubbing behavior among college students.

### Fear of Missing Out as a Mediator

*Fear of missing out* has been defined as a type of pervasive anxiety felt by individuals who believe they may not be present when others are potentially having rewarding experiences (Przybylski et al., 2013). This fear may mediate the relationship between relative deprivation and phubbing, as individuals who experience fear of missing out tend to use smartphones anytime and anywhere to acquire information on others' activities (Wegmann et al., 2017). Even during social interactions, fear of missing out makes it difficult for individuals to be away from their smartphones, and this leads them to pay less attention to others (Beyens et al., 2016). Balta et al. (2020) previously demonstrated that fear of missing out was positively correlated with phubbing. As mentioned above, relative deprivation can lead to negative internal states, such as stress and hopelessness, as interpersonal-level outcomes (Smith et al., 2012). Anxiety can be an important indicator of individual internal states, and Beshai et al. (2017) described anxiety and depression as specific emotional reactions to relative deprivation. Furthermore, X. Xie et al. (2018) investigated 815 college students and found that relative deprivation mediated the relationship between basic psychological needs satisfaction and fear of missing out, and that this mediating effect was moderated by friend support. Thus, we proposed the following hypothesis:

**Hypothesis 2:** The positive relationship between relative deprivation and phubbing will be mediated by college students' fear of missing out.

## Method

### Participants and Procedure

We obtained ethical approval from the ethics review board of our university. Using convenience sampling, we recruited first-year students from two universities in Henan City and Jiangsu City to complete the survey in exchange for research credit. All participants provided informed consent and decided voluntarily whether to take part in the research. They were assured that choosing not to participate in the survey would not impact on their grades in the course.

We distributed the survey link via WeChat or QQ groups using the Wenjuanxing survey platform. Ultimately, 858 surveys were returned, of which 851 were valid and seven were removed because fewer than half of the questions had been answered (response rate = 99.18%). The inclusion criterion was having a smartphone. Participants were 172 men (20.2%) and 679 women (79.8%) aged between 17 and 20 years ( $M_{\text{age}} = 18.78$ ,  $SD = 0.66$ ).

### Measures

#### *Relative Deprivation*

We measured relative deprivation with a four-item questionnaire developed by Ma (2012), on which participants rate their answers using a 5-point Likert scale ranging from 1 (*strongly disagree*) to 5 (*strongly agree*). Sample items include “I always feel that someone else has something that should belong to me” and “Compared with the people around me, I have suffered a lot in life, work, and other aspects.” The higher the total score, the more severe is the respondent’s perceived relative deprivation. Cronbach’s alpha was .67 in this study.

#### *Fear of Missing Out*

We used the Chinese version (Li et al., 2019) of the Fear of Missing Out Scale (Przybylski et al., 2013), which comprises eight items rated on a 5-point Likert scale ranging from 1 (*strongly disagree*) to 5 (*strongly agree*). The scale has two dimensions with four items each: fear of missing information and fear of missing situations. Sample items are “I fear my friends are having more fun without me” and “When I miss a planned get-together, it bothers me.” Cronbach’s alpha was .80 in this study.

#### *Phubbing*

We adopted the Chinese version (M. Xie & Liu, 2020) of the Phubbing Scale (Karadağ et al., 2015). It consists of eight items divided across two dimensions: communication disturbance (e.g., “People complain about my dealing with my cell phone”) and phone obsession (e.g., “I feel incomplete without my cell phone”). Participants respond using a 5-point Likert scale ranging from 1 (*never*) to 5 (*always*). Cronbach’s alpha was .82 in this study.

## Results

Pearson correlation analysis results indicate that relative deprivation had significant positive correlations with fear of missing out and phubbing ( $p < .01$ ). The results are described in Table 1.

Table 1. Means, Standard Deviations, and Correlation Coefficients Between Variables

Variables	<i>M</i>	<i>SD</i>	1	2	3	4
1. Relative deprivation	2.26	0.73				
2. Fear of missing out	2.68	0.70	.44**			
3. Phubbing	2.60	0.70	.20**	.36**		
4. Communication disturbance	3.14	0.94	.14**	.33**	.88**	
5. Phone obsession	2.05	0.70	.20**	.27**	.79**	.44**

Note. *N* = 858.

\*  $p < .05$ . \*\*  $p < .01$ .

We used Amos 26.0 to conduct structural equation modeling for hypothesis testing. We used a bootstrapping analysis with 1,000 resamples to calculate the total effects. After controlling for gender and age, the results show that relative deprivation positively influenced phubbing in our sample,  $\beta = .31$ ,  $p < .01$ ; chi square/degrees of freedom ( $\chi^2/df$ ) = 1.26, goodness-of-fit index (GFI) = .99, comparative fit index (CFI) = .99, normed fit index (NFI) = .99, incremental fit index (IFI) = .99, Tucker–Lewis index (TLI) = .99, root mean square error of approximation (RMSEA) = .01. Thus, Hypothesis 1 was supported.

We then used structural equation modeling to analyze the mediating effect of fear of missing out in the relationship between relative deprivation and phubbing. This model also showed a good fit to the data,  $\chi^2/df$  = 3.31, GFI = .98, CFI = .97, NFI = .96, IFI = .97, TLI = .95, RMSEA = .05. We used bootstrapping estimation with 1,000 resamples to test the mediated model (see Table 2).

Table 2. Direct, Indirect, and Total Effects for the Final Model

Model pathways	Estimated effect	95% CI	
		<i>LL</i>	<i>UL</i>
Direct effect			
Relative deprivation → Phubbing	-.006	-0.221	0.203
Indirect effect			
Relative deprivation → FOMO → Phubbing	.322	0.172	0.537
Total effect	.316	0.196	0.431

Note. *N* = 858. FOMO = fear of missing out; CI = confidence interval; *LL* = lower limit; *UL* = upper limit.

As shown in Figure 1, relative deprivation was positively associated with fear of missing out,  $\beta = .65$ ,  $p < .01$ , and fear of missing out was positively associated with phubbing,  $\beta = .49$ ,  $p < .01$ . When controlling for fear of missing out, relative deprivation had no significant direct effect on phubbing,  $\beta = .01$ ,  $p > .05$ , 95% confidence interval [-0.22, 0.20]. However, the indirect effect of relative deprivation on phubbing via fear of missing out was .322, 95% confidence interval [0.17, 0.53], indicating that the effect was fully mediated by fear of missing out. Thus, Hypothesis 2 was also supported.

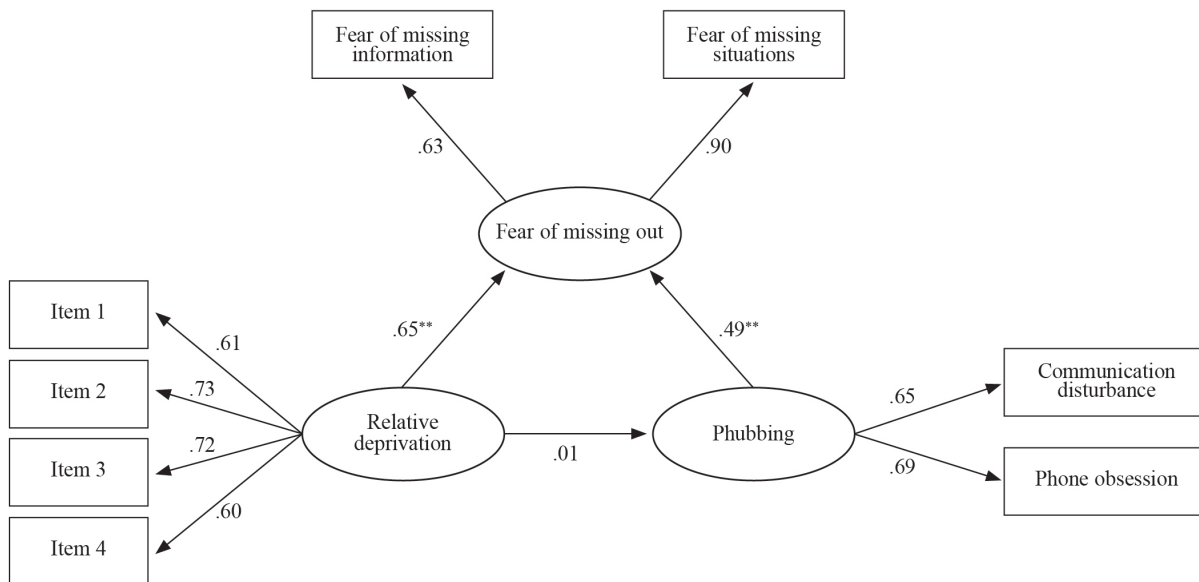


Figure 1. *Standardized Factor Loadings for the Mediated Structural Equation Model*

Note.  $N = 858$ .

\*\*  $p < .001$ .

## Discussion

### Theoretical Implications

We explored the relationships between relative deprivation, fear of missing out, and phubbing. Our first key finding is that relative deprivation was positively associated with phubbing among college students, indicating that those who perceived higher relative deprivation tended to engage in more phubbing during social interactions. This finding corresponds with previous research results suggesting that relative deprivation could be associated with issues such as Internet game addiction and problematic cell phone use (Ding et al., 2018; Lin & Liu, 2020), and could potentially be explained by compensatory Internet use theory (Kardefelt-Winther, 2014) and uses and gratifications theory (Ifinedo, 2016). According to compensatory Internet use theory, phubbing can be seen as a way of escaping negative emotions in social interactions by engaging with one's cell phone (Elhai & Contractor, 2018). Relative deprivation mainly comprises negative emotions, such as anger, injustice, and dissatisfaction (Smith et al., 2012), and phubbing allows one to avoid these emotions. Uses and gratifications theory postulates that people use technology instead of engaging in face-to-face interactions to achieve immediate gratification (Ifinedo, 2016). Previous research has shown that relative deprivation was negatively correlated with the satisfaction of basic psychological needs (X. Xie et al., 2018). Thus, college students with high relative deprivation may tend to engage in phubbing to satisfy their psychological needs.

Furthermore, we have expanded knowledge of the antecedent variables of phubbing from the perspective of macrosystem psychosocial factors. Al-Saggaf and O'Donnell (2019) reported that previous studies have mainly focused on intrapersonal antecedents of phubbing, such as personality, coping style, and negative emotions (e.g., loneliness, boredom), and pointed to a study investigating why people engage in phubbing from a sociological perspective. Relative deprivation is a construct that reflects how individuals perceive their social environment within a certain socioeconomic hierarchy (Power et al., 2020). Our study is the first

to investigate the effect of relative deprivation on phubbing among college students, who tend to experience emotional instability and be more prone to developing relative deprivation than are other age groups (Ding et al., 2018). Thus, we have deepened understanding of why college students exhibit phubbing behavior based on the model of relative deprivation.

Our second key finding is that fear of missing fully mediated the relationship between relative deprivation and phubbing. According to Smith et al.'s (2012) model of the relative deprivation experience, relative deprivation affects not only individual internal states but also behaviors. Relative deprivation—specifically, personal relative deprivation—can change one's internal state, especially by increasing anxiety (Smith & Huo, 2014). Fear of missing out is a negative emotional experience, and its main element is anxiety regarding missing out on others' information or activities (Beyens et al., 2016). Therefore, relative deprivation may increase fear of missing out. This finding is also consistent with that of X. Xie et al. (2018), who found that relative deprivation was positively associated with fear of missing out. Our results indicate that fear of missing out can positively predict phubbing. Thus, in line with compensatory Internet use theory, in attempting to decrease their fear of missing out, individuals tend to overuse their smartphones to obtain information during all situations, including social interactions, thereby engaging in phubbing (Balta et al., 2020). Notably, fear of missing out played a fully mediating role in our research model, indicating the need to pay more attention to this factor in future research.

### **Practical Implications**

Our results have some practical implications. It is important for college administrative departments to pay attention to the effects of the macrosystem environment on college students' individual psychological perceptions. College students who perceive high levels of relative deprivation are prone to negative psychological states and problematic behaviors. Thus, practitioners could help college students to reduce their phubbing behavior and improve their social efficacy and social adjustment through interventions that employ techniques such as cognitive behavioral therapy. Increasing college students' self-confidence and self-esteem could also help them to cope with relative deprivation. Furthermore, it is important to pay attention to fear of missing out in college students, especially those with high relative deprivation, and to take efforts to reduce it.

### **Limitations and Future Research Directions**

When interpreting our findings, some limitations should be considered. First, we measured personal relative deprivation and not group relative deprivation, which occurs when people perceive their in-group to be disadvantaged relative to an out-group (Smith & Huo, 2014). Group relative deprivation may exaggerate personal relative deprivation (Smith et al., 2012); therefore, future research could investigate the interactions of these types of relative deprivation. Second, relative deprivation can lead to negative internal states, such as stress and hopelessness, as interpersonal-level outcomes (Smith et al., 2012). Anxiety can be an important indicator of individual internal states, and Beshai et al. (2017) posited that anxiety and depression are specific emotional reactions to relative deprivation. Although fear of missing out is one type of pervasive anxiety, future studies should include more indices of anxiety and depression. Third, longitudinal and experimental research is needed to provide deeper insight into the causal relationships among the study's variables. There are some previous longitudinal and experimental studies that could be referenced (Chotpitayasunondh & Douglas, 2018; X. Xie & Xie, 2020). Furthermore, the mediator in this study, fear of missing out, is a more complex construct that has previously been shown to comprise dispositional trait fear of missing out and state fear of missing out (Wegmann et al., 2017). Balta et al. (2020) found that trait fear of missing out affected phubbing via state fear of missing out, which may expand the possibilities for future investigations. Self-reports may also lead to bias, because people may not want to admit to phubbing in social contexts. Further studies could use other reporting methods to avoid this. Finally, participants were all first-year college students in China, which may limit the generalizability of the results to other populations. Future studies could investigate the relationships between fear of missing out, relative deprivation, and phubbing with other cohorts.

## References

- Al-Saggaf, Y., & O'Donnell, S. B. (2019). Phubbing: Perceptions, reasons behind, predictors, and impacts. *Human Behavior and Emerging Technologies, 1*(2), 132–140.  
<https://doi.org/10.1002/hbe2.137>
- Balta, S., Emirtekin, E., Kircaburun, K., & Griffiths, M. D. (2020). Neuroticism, trait fear of missing out, and phubbing: The mediating role of state fear of missing out and problematic Instagram use. *International Journal of Mental Health and Addiction, 18*(3), 628–639.  
<https://doi.org/10.1007/s11469-018-9959-8>
- Beshai, S., Mishra, S., Mishra, S., & Carleton, R. N. (2017). Personal relative deprivation associated with functional disorders via stress: An examination of fibromyalgia and gastrointestinal symptoms. *PLOS One, 12*(12), Article e0189666.  
<https://doi.org/10.1371/journal.pone.0189666>
- Beyens, I., Frison, E., & Eggermont, S. (2016). “I don’t want to miss a thing”: Adolescents’ fear of missing out and its relationship to adolescents’ social needs, Facebook use, and Facebook related stress. *Computers in Human Behavior, 64*, 1–8.  
<https://doi.org/10.1016/j.chb.2016.05.083>
- Billieux, J. (2012). Problematic use of the mobile phone: A literature review and a pathways model. *Current Psychiatry Reviews, 8*(4), 299–307.  
<https://doi.org/10.2174/157340012803520522>
- Błachnio, A., & Przepiorka, A. (2019). Be aware! If you start using Facebook problematically you will feel lonely: Phubbing, loneliness, self-esteem, and Facebook intrusion. A cross sectional study. *Social Science Computer Review, 37*(2), 270–278.  
<https://doi.org/10.1177/0894439318754490>
- Callan, M. J., Kim, H., Gheorghiu, A. I., & Matthews, W. J. (2017). The interrelations between social class, personal relative deprivation, and prosociality. *Social Psychological and Personality Science, 8*(6), 660–669.  
<https://doi.org/10.1177/1948550616673877>
- China Internet Network Information Center. (2020). *The 46th statistical report on the development of Internet in China*. Author. <https://bit.ly/3eAB3Yt>
- Chotpitayasunondh, V., & Douglas, K. M. (2018). The effects of “phubbing” on social interaction. *Journal of Applied Social Psychology, 48*(6), 304–316.  
<https://doi.org/10.1111/jasp.12506>
- Cudo, A., Torój, M., Demczuk, M., & Francuz, P. (2020). Dysfunction of self-control in Facebook addiction: Impulsivity is the key. *Psychiatric Quarterly, 91*(1), 91–101.  
<https://doi.org/10.1007/s11126-019-09683-8>
- Davey, S., Davey, A., Raghav, S. K., Singh, J. V., Singh, N., Blachnio, A., & Przepiorka, A. (2018). Predictors and consequences of “phubbing” among adolescents and youth in India: An impact evaluation study. *Journal of Family & Community Medicine, 25*(1), 35–42. <https://bit.ly/3uLCFVA>
- Ding, Q., Tang, Y., Wei, H., Zhang, Y., & Zhou, Z. (2018). The relationship between relative deprivation and online gaming addiction in college students: A moderated mediation model [In Chinese]. *Acta Psychologica Sinica, 50*(9), 1041–1050.  
<https://doi.org/10.3724/SP.J.1041.2018.01041>
- Elhai, J. D., & Contractor, A. A. (2018). Examining latent classes of smartphone users: Relations with psychopathology and problematic smartphone use. *Computers in Human Behavior, 82*, 159–166.  
<https://doi.org/10.1016/j.chb.2018.01.010>

- Ergün, N., Göksu, İ., & Sakız, H. (2020). Effects of phubbing: Relationships with psychodemographic variables. *Psychological Reports, 123*(5), 1578–1613.  
<https://doi.org/10.1177/0033294119889581>
- Ifinedo, P. (2016). Applying uses and gratifications theory and social influence processes to understand students' pervasive adoption of social networking sites: Perspectives from the Americas. *International Journal of Information Management, 36*(2), 192–206.  
<https://doi.org/10.1016/j.ijinfomgt.2015.11.007>
- Ivanova, A., Gorbaniuk, O., Blachnio, A., Przepiórka, A., Mraka, N., Polishchuk, V., & Gorbaniuk, J. (2020). Mobile phone addiction, phubbing, and depression among men and women: A moderated mediation analysis. *Psychiatric Quarterly, 91*, 655–668.  
<https://doi.org/10.1007/s11126-020-09723-8>
- Karadağ, E., Tosuntaş, Ş. B., Erzen, E., Duru, P., Bostan, N., Şahin, B. M., ... Babadağ, B. (2015). Determinants of phubbing, which is the sum of many virtual addictions: A structural equation model. *Journal of Behavioral Addictions, 4*(2), 60–74.  
<https://doi.org/10.1556/2006.4.2015.005>
- Kardefelt-Winther, D. (2014). A conceptual and methodological critique of Internet addiction research: Towards a model of compensatory Internet use. *Computers in Human Behavior, 31*, 351–354.  
<https://doi.org/10.1016/j.chb.2013.10.059>
- Kneidinger-Müller, B. (2019). When the smartphone goes offline: A factorial survey of smartphone users' experiences of mobile unavailability. *Computers in Human Behavior, 98*, 1–10.  
<https://doi.org/10.1016/j.chb.2019.03.037>
- Li, Q., Wang, J. N., Zhao, S. Q., & Jia, Y. R. (2019). Validity and reliability of the Chinese version of the Fear of Missing Out Scale in college students [In Chinese]. *Chinese Mental Health Journal, 33*(4), 312–317.  
<https://doi.org/10.3969/j.issn.1000-6729.2019.04.014>
- Lin, Y., & Liu, Q. (2020). Perceived subjective social status and smartphone addiction tendency among Chinese adolescents: A sequential mediation model. *Children and Youth Services Review, 116*, Article 105222.  
<https://doi.org/10.1016/j.childyouth.2020.105222>
- Ma, A. (2012). Relative deprivation and social adaption: The role of mediator and moderator [In Chinese]. *Acta Psychologica Sinica, 44*(3), 377–387.  
<https://doi.org/10.3724/SP.J.1041.2012.00377>
- McDaniel, B. T., & Drouin, M. (2019). Daily technology interruptions and emotional and relational well-being. *Computers in Human Behavior, 99*, 1–8.  
<https://doi.org/10.1016/j.chb.2019.04.027>
- Mishra, S., & Meadows, T. J. (2018). Does stress mediate the association between personal relative deprivation and gambling? *Stress and Health, 34*(2), 331–337.  
<https://doi.org/10.1002/smi.2789>
- Power, S. A., Madsen, T., & Morton, T. A. (2020). Relative deprivation and revolt: Current and future directions. *Current Opinion in Psychology, 35*, 119–124.  
<https://doi.org/10.1016/j.copsyc.2020.06.010>
- Przybylski, A. K., Murayama, K., DeHaan, C. R., & Gladwell, V. (2013). Motivational, emotional, and behavioral correlates of fear of missing out. *Computers in Human Behavior, 29*(4), 1841–1848.  
<https://doi.org/10.1016/j.chb.2013.02.014>

Smith, H. J., & Huo, Y. J. (2014). Relative deprivation: How subjective experiences of inequality influence social behavior and health. *Policy Insights from the Behavioral and Brain Sciences*, 1(1), 231–238.  
<https://doi.org/10.1177/2372732214550165>

Smith, H. J., Pettigrew, T. F., Pippin, G. M., & Bialosiewicz, S. (2012). Relative deprivation: A theoretical and meta-analytic review. *Personality and Social Psychology Review*, 16(3), 203–232.  
<https://doi.org/10.1177/1088868311430825>

Vanden Abeele, M. M. P., Hendrickson, A. T., Pollmann, M. M. H., & Ling, R. (2019). Phubbing behavior in conversations and its relation to perceived conversation intimacy and distraction: An exploratory observation study. *Computers in Human Behavior*, 100, 35–47.  
<https://doi.org/10.1016/j.chb.2019.06.004>

Vanden Abeele, M. M. P., & Postma-Nilsenova, M. (2018). More than just gaze: An experimental vignette study examining how phone-gazing and newspaper-gazing and phubbing-while-speaking and phubbing-while-listening compare in their effect on affiliation. *Communication Research Reports*, 35(4), 303–313.  
<https://doi.org/10.1080/08824096.2018.1492911>

Wang, X., Xie, X., Wang, Y., Wang, P., & Lei, L. (2017). Partner phubbing and depression among married Chinese adults: The roles of relationship satisfaction and relationship length. *Personality and Individual Differences*, 110, 12–17.  
<https://doi.org/10.1016/j.paid.2017.01.014>

Wegmann, E., Oberst, U., Stodt, B., & Brand, M. (2017). Online-specific fear of missing out and Internet-use expectancies contribute to symptoms of Internet-communication disorder. *Addictive Behaviors Reports*, 5, 33–42.  
<https://doi.org/10.1016/j.abrep.2017.04.001>

Xie, M., & Liu, A. (2020). Development of a Chinese phubbing scale [In Chinese]. *Chinese Journal of Clinical Psychology*, 28(2), 316–320.  
<http://doi.org/10.16128/j.cnki.1005-3611.2020.02.020>

Xie, X., Wang, Y., Wang, P., Zhao, F., & Lei, L. (2018). Basic psychological needs satisfaction and fear of missing out: Friend support moderated the mediating effect of individual relative deprivation. *Psychiatry Research*, 268, 223–228.  
<https://doi.org/10.1016/j.psychres.2018.07.025>

Xie, X., & Xie, J. (2020). Parental phubbing accelerates depression in late childhood and adolescence: A two-path model. *Journal of Adolescence*, 78, 43–52.  
<https://doi.org/10.1016/j.adolescence.2019.12.004>