

## Research Article

# Fear of Missing Out (FOMO): The Effects of the Need to Belong, Perceived Centrality, and Fear of Social Exclusion

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“Fear of Missing Out” (FOMO) is an all-consuming feeling that is associated with mental and emotional stress. Such strains are caused by a compulsive concern that one is missing an opportunity for a socially rewarding experience often spotted on social media networks. While several personality and psychological factors have been empirically validated as correlated with FOMO, so far, little research has examined the effects of perceived group centrality (i.e., the extent to which group members feel included in the group) and fear of social exclusion on FOMO. Therefore, this study is aimed at examining the mechanism that links these socially driven factors and the need to belong with social media use and, consequently, FOMO, using structural equation modeling. A total of 490 college students (mean age = 20.56, SD = 1.44) completed a self-reported questionnaire that included measures of FOMO, the need to belong, social media use, perceived centrality, and fear of social exclusion. The need to belong emerged as the best predictor of FOMO, increasing it both directly and indirectly through the significant mediation of social media use. Females reported a greater need to belong and consequently more FOMO. Females also reported greater use of social media and greater perceived group centrality. Perceived centrality increased FOMO through social media use, but this indirect effect was not significant.

## 1. Introduction

The use of social media is pervasive. Social media is broadly defined as web-based services that enable users to create public or semipublic profiles, establish a communication network with other users, and exchange user-generated content [1]. It is estimated that 84% of American adults aged 18 to 30 years use one form or another of social media, such as YouTube, Instagram, and Facebook [2]. Of all population segments, college students are the most digitally driven with roughly 97% of them using social media for an average of three hours per day [3–5]. It was also reported that, on average, young Americans check their phones 262 times a day—that is, once every 5.5 minutes [6]. Many users find themselves checking their phones for messages, alerts, or calls, even when the phone has not been ringing or vibrating.

The pervasiveness of social media in everyday life is largely due to both its socially gratifying nature and habit-forming affordances and functionality. Social media has a remarkable capacity to satisfy the innate need for social con-

nection and curiosity about what others are doing—often serving as a conduit for social capital by providing a wide range of information and services and offering abundant opportunities for people to connect, keep tabs on social events, and gratify their belonging needs [1, 4, 7–12]. Furthermore, social media provides a steady supply of built-in incentives such as alerts, notifications, likes, and “friend” requests. These incentives serve as social rewards, activating the brain reward circuit and eliciting reflexive responses that develop into habitual media consumption over time [1]. Thus, picking up a phone to check notifications becomes an instinctive and spontaneous reaction that is engaged in without conscious thinking [13]. Due to the enticing nature of social media, young people often exhibit an emotional attachment to their cell phones, and many report feeling nervous and disturbed when they are separated from them [14–16].

Social media also provides a platform where idealistic versions of the self are often selectively portrayed, hence offering abundant opportunities for social comparison and

as a result triggering anxiety, loneliness, depression, sensitivity to social exclusion, poor academic performance, and overall poor wellbeing [1, 8, 14, 17–30]. Uneasiness is often experienced as a result of glancing at a stream of social network posts, photos, status updates, and videos featuring the fun that peers are having, thus evoking a general feeling of “missing out” [25, 31, 32].

Fear of Missing Out (FOMO) has been defined as a pervasive apprehension that others might be having rewarding social experiences from which one is absent [33]. It is a state of hypervigilance and agitation that is often associated with social media use [17, 33–35]. FOMO is frequently discussed as a social media byproduct inducing mental and emotional strain as individuals scroll through social media feeds featuring social events [25, 33, 36, 37]. FOMO was found to be unrelated to the Big Five personality traits—indicating that it is not merely echoing high extroversion or neuroticism [25]. Although FOMO is often evaluated as a trait and may have neural circuits [33, 38–41], the degree to which it is experienced may fluctuate across various situations. FOMO is experienced more frequently later in the day and towards the end of the week, where social events are typically at their peak [25]. With the push alert technology embedded in social media, individuals get notified of these social events in real time—further distracting people from their in-moment experiences and exacerbating the missing-out anxieties [19, 25, 42].

As a trait, people differ in the extent to which they fear missing out [33]. People who fear missing out to a greater extent were more vulnerable to mood disturbances, social media addiction, fatigue, stress, decreased sleep, and poor psychological well-being [25, 26, 33, 37, 43]. FOMO predicted heightened negative affect over the week [44]. FOMO has also been linked with more alcohol consumption and higher incidence of alcohol-related negative consequences [45, 46], lower self-esteem [37], and decreased life satisfaction [47].

While the literature has validated the link between FOMO and problematic smartphone use [38, 39, 48], it reveals two different conceptualizations of FOMO. A large amount of research has framed FOMO as a precursor to social media use, with the hypothesis that those who experience higher levels of FOMO would feel more compelled to check their social media networks (e.g., [26, 33, 35, 49–55]). Within this conceptual framework, FOMO was found to mediate the effects of psychological deficiencies in social relatedness and autonomy on social media use [33]. FOMO also mediated the effects of boredom proneness and depression and anxiety on problematic smartphone use severity [34, 48]. On the other hand, a smaller body of research, including the current study, has conceptualized FOMO as a by-product or consequence of social media, hypothesizing that scrolling through social media induces and exacerbates emotions of missing out (FOMO) (e.g., [37, 40, 56]). This conceptualization fits the proposed basic model of human behavior with technologies, which establishes the links between four elements including users, technologies, activities, and effects [57].

Coco et al. [58] stated that the Compensatory Internet Use Theory [59] may potentially support both pathways—

social media may help regulate unpleasant feelings like FOMO, but it can also cause them. It is also plausible to get caught in a vicious cycle of social media use and FOMO. Coco et al. [58] conducted a two-wave panel study of FOMO and problematic smartphone use among adolescents with a one-year time lag in an attempt to unravel the directionality of the relationship. The findings confirmed the positive connections between the two variables at both time periods (i.e., at the cross-sectional level); however, no significant cross-lagged relationships were longitudinally validated.

Although a number of personality and psychological factors have been empirically validated as correlated with FOMO, little research has thus far examined the effects of perceived group centrality (i.e., the extent to which group members feel included in the group) and fear of social exclusion on FOMO. Given that FOMO is a social comparison at heart whereby individuals wish they were somewhere else or doing something “more fun,” bringing into consideration the social context in which the individual is embedded can offer many unique insights about the mechanism of its functioning and optimize future interventions. Sensitivity to fear of missing out is likely to vary as a function of the need to belong, perceived group centrality, and the fear of social exclusion. To this end, this study is aimed at investigating how these variables operate to influence the general fear of missing out.

## 2. Literature Review

*2.1. The Need to Belong, Social Media, and FOMO.* Our brains are wired to be socially connected, and this need is as fundamental as our need for food and sex. Belonging, which is ranked third on Maslow’s 1968 hierarchy of needs after physiological and safety needs, increases the odds of not just surviving but also thriving [60, 61]. The seminal paper by Baumeister and Leary [7] corroborates the argument that people are fundamentally social and have an innate need for social connections. This drive for connection has been broadly and theoretically labelled as the “need to belong” and has been integral to the survival of humans. The need to belong has been generally defined as a pervasive desire to form and maintain interpersonal connections [62, 63]. The fulfillment of the need to belong is associated with a broad range of positive emotions and overall well-being [64, 65]. Failure to maintain social relationships results in unfulfilled belonging needs and consequently a wide array of adverse psychological, physical, and pathological outcomes [66, 67].

The need to belong has been validated as a fundamental human motivation that shapes cognition and emotion and directs behavior [7, 62, 68–70]. It has been described as the “invisible hand” and “underlying theory” that explicates a wide range of phenomena in social psychology ([71], p. 2). Pickett et al. [70] likened the need for belongingness to physiological hunger, stating, “similar to the perpetually hungry person who is constantly scanning her environment for food, an individual high in belonging needs should be chronically attuned to social cues” (p. 1096).

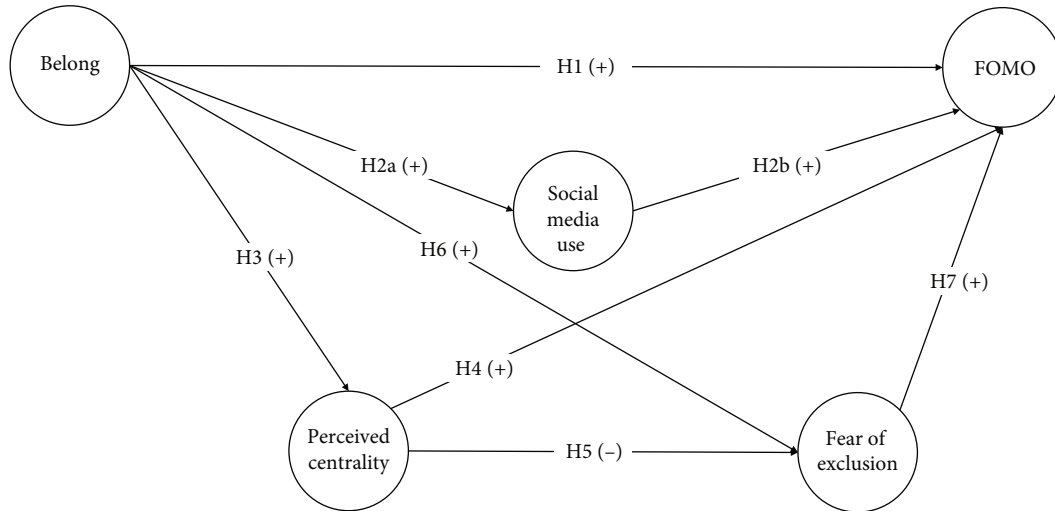


FIGURE 1: The proposed model: effects of the need to belong, social media use, perceived centrality, and fear of social exclusion on FOMO.

Research indicates that a higher need for belongingness is associated with greater social surveillance and motivates individuals to scan and navigate their environment for social opportunities [70, 72]. The need to belong drives social media use because platforms such as Facebook, Instagram, and Snapchat offer plenty of opportunities for social engagement and subsequent satisfaction of the need to belong [12, 50, 73]. Participants who scored high in the need to belong outperformed others in attending to and accurately encoding social cues [70]. Such navigation and heightened attention for social cues typically trigger social comparison anxieties [21, 74, 75]. Defined as an anxiety that others are having more fun, FOMO is likely to ensue from social media navigation. Research has validated the link between the need to belong and FOMO [40, 55]. FOMO was also found to be positively correlated with brain sensitivity towards social inclusive experiences and with the belonging need [40]. Based on these findings, it is likely that a higher need to belong will be positively associated with FOMO both directly and indirectly through social media use (see H1 and H2a and H2b, respectively, in Figure 1).

*2.2. The Need to Belong, Perceived Group Centrality, Fear of Social Exclusion, and FOMO.* This study is also aimed at examining the effects of group membership status and fear of social exclusion on FOMO. Group membership status refers to the perceived degree of inclusion into the group, and it influences psychological processing and behavior [70, 76]. Research on group membership has differentiated between core (i.e., central) and peripheral (i.e., marginal) members in terms of their essentiality in the group fabric. Core members have a significant influential role in setting the norms of a group and are evaluated more positively. In contrast, peripheral members are less engaged in the group. They deviate from the core group norms and are less prototypical than core members [77–79]. Peripheral members also demonstrate less stability and consistency in their affective and behavioral responses due to the various individual and group inclusion goals and dynamics [70, 77].

The premise that core members are more integrated and engaged in the group implies that their perceived group centrality (i.e., inclusion) might be partially driven by their higher belonging needs and that they may disproportionately experience higher degrees of FOMO (H3 and H4 in Figure 1). In other words, perceived group centrality is likely to mediate the positive effect of the need to belong on FOMO. In addition, based on the previous findings in the belongingness and group membership research [70, 80], it is logical to hypothesize that core members with higher perceived centrality and more appreciation from others will have relatively less fear of exclusion because they are more integrated into the group than peripheral members (H5 in Figure 1).

Social exclusion is conceptualized as the perceived exclusion or shunning from a social group, oftentimes resulting in negative emotions [81, 82]. Research indicates that the threat of social exclusion led participants to exert considerably more effort towards social integration [83]. Social exclusion is often marked by feelings of jealousy, anxiety, depression, and loneliness, and it influences attention, a pivotal building block in many complex cognitive processes [68, 82, 84–88].

People who are threatened by social exclusion normally engage in continuous social surveillance and exhibit a goal-driven behavior directed at establishing and solidifying relationships [80]. Compared to nonexcluded participants, socially excluded participants were faster in recognizing smiling faces in a crowd and were more likely to fixate on smiling faces [68, 89, 90]. Integrating findings from this line of research and the belongingness premises stating that individuals with high belonging needs should be reluctant to break social bonds, it is plausible to predict that fear of social exclusion might be partially driven by the need to belong, such that individuals with a more intense need for belonging are more sensitive to social exclusion threats (see H6 in Figure 1). Furthermore, based on the findings linking fear of social exclusion with social surveillance [68], it is reasonable to predict that individuals with a greater fear of social exclusion will be more preoccupied with the rewarding

experiences that others are having, thus more prone to FOMO than those who are less anxious about their inclusion status (see H7 in Figure 1). Incorporating the above hypotheses together yields the model presented in Figure 1.

### 3. Methodology

**3.1. Research Design, Participants, and Procedure.** The study employed a nonexperimental one-shot survey design and drew its sample from a college student population at a large northeastern university in the United States. The questionnaire was posted on Qualtrics, and students were invited to participate in the study via online announcements. Those who agreed to participate were required to provide consent in accordance with the University Institutional Review Board (IRB) rules and regulations. Upon consent, participants were directed to an online questionnaire. After completing the questionnaire, participants were invited to participate in a drawing for six gift cards valued at \$50, one gift card valued at \$100, and one gift card valued at \$200. Four hundred and ninety (490) college students completed the survey. The mean age was 20.56 (SD = 1.44). About 66.3% of the participants were females, and 65.9% were white. The sample was weighted by gender to correct for any bias that might have been caused by the larger female sample size.

**3.2. Measures.** *Fear of missing out* (FOMO; [33]) is a 10-item scale that measures FOMO. Participants rated the extent to which the 10 statements were true of them, with responses ranging from 1 (*not at all true of me*) to 7 (*extremely true of me*). The total score was calculated by taking the average of 10 items ( $M = 3.51, SD = 1.25$ ). The FOMO scale had high internal consistency (Cronbach's  $\alpha = .88$ ) and demonstrated a good CFA model fit,  $MLM\chi^2(37) = 102.595, p < .001, RMSEA = .063$  (90%CI = .048, .077;  $p = .071$ ), CFI = .971, TLI = .957, SRMR = .042.

*The need to belong* [91] is a ten-item scale that ranges from 1 = *not true of me* to 7 = *very true of me*. Participants were asked to indicate the extent to which each statement was characteristic of them (e.g., I need to feel that there are people in my group that I can turn to in times of need). Three items were reverse coded. The need to belong was calculated by taking the average score of the ten items,  $M = 4.35$  (SD = 1.03), and had an acceptable reliability of  $\alpha = .82$ .

*Perceived centrality* was measured using a subset of the perceived group inclusion scale [63, 92]. Participants were asked to think about the group they hang out with the most and indicate the extent of their agreement to 8 items tapping their perceived membership to that particular group (four items) and the affection they received from it (four items), with responses ranging from 1 = *strongly disagree* to 7 = *strongly agree*. The items were the following: The group I hang out with the most (1) gives me the feeling that I belong, (2) gives me the feeling that I am part of the group, (3) gives me the feeling that I fit in, (4) treats me as an insider, (5) likes me, (6) appreciates me, (7) is pleased with me, and (8) appreciates me. Group membership status was calculated

by taking the average of the responses to the three items ( $M = 5.73, SD = 1.13$ ). Higher scores indicate higher perceived centrality in the group (i.e., core membership). The reliability of the group membership status was  $\alpha = .97$ .

A Confirmatory Factor Analysis (CFA) was run in Mplus to compare the model fit between two alternative factor configurations of perceived centrality. The first was a one-factor model whereby all eight items were forced to load on one latent factor named "perceived centrality." The second was a two-factor model whereby the first four items were modeled as indicators of "perceived centrality" and the last four items were modeled as indicators of "perceived affection." The two-factor model showed a better fit to the data,  $MLM\chi^2(19) = 21.288, p < .001, RMSEA = .017$  (90% CI = .000, .048;  $p = .962$ ), CFI = .998, TLI = .998, SRMR = .017. The Satorra-Bentler Scaled Chi-square Difference Test showed a significant model fit improvement of the two-factor configuration,  $MLM\Delta\chi^2(1) = 4.089, p < .05$ . Based on this finding, the proposed model was modified to reflect the two-factor configuration of perceived centrality (see Figure 2).

*Fear of social exclusion* was measured using the following three items: (1) I fear being excluded from the group I hang out with the most, (2) I worry when I feel left out from the group I hang out with the most, and (3) I aspire for more group inclusion in the group I hang out with the most. Responses for these items ranged from 1 = *not true of me* to 7 = *very true of me*. Fear of social exclusion was calculated by taking the average of the responses to the three items ( $M = 3.72, SD = 1.81$ ) and demonstrated good reliability  $\alpha = .90$ .

*Social media use* [93] is a nine-item subscale. Participants were asked to indicate how much they use social media, on a 10-point frequency scale ranging from 1 = *never* to 10 = *all the time*. Three additional items were added to the scale to reflect the frequency that participants use social media for partying-related activities, namely, to (1) check their social networks to find out where the parties or social gatherings are, (2) post pictures from the parties and social gatherings they go to, and (3) like or comment on the posts/photos of friends' parties and social gatherings (Table 1). These three were added based on prior discussions with college students on how they use social media for partying and getting together. Social media use was calculated by taking the average score of the twelve items ( $M = 4.75, SD = 1.61$ ). Cronbach's alpha reliability for the social media scale was  $\alpha = .90$ .

The demographic variables included participants' age, gender, ethnic and racial background, and academic year.

**3.3. Data Analysis.** Hypothesis testing was carried out using SPSS correlation and hierarchical regression analysis and structural equation modeling. Correlational and hierarchical regression analyses were initially used to examine the relationships between the variables. The results of the regression analysis are reported using standardized weights.

Subsequent hypothesis testing was carried out through structural equation modeling using Mplus version 7.2 with an MLM estimator [94]. Measurement models were first

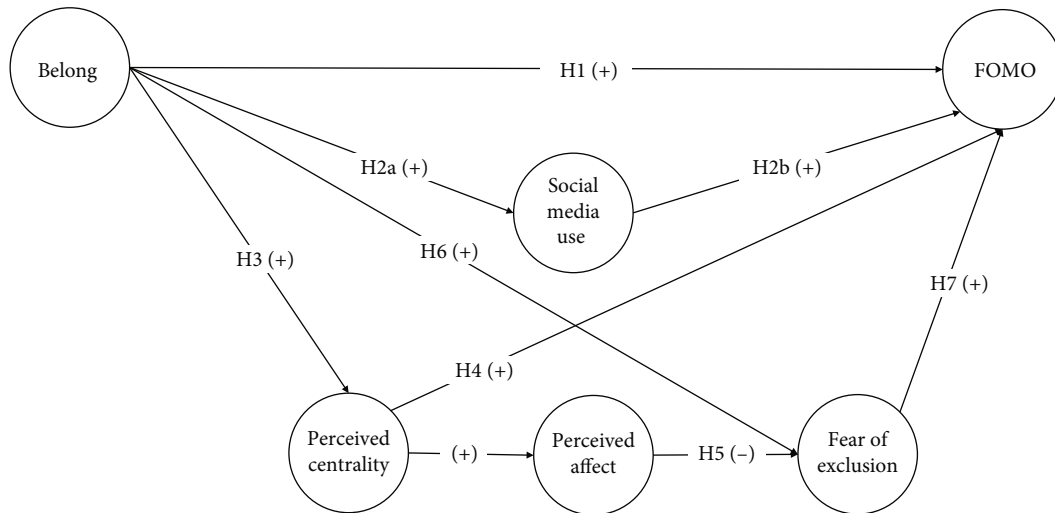


FIGURE 2: The modified proposed model: effects of the need to belong, social media use, perceived centrality, and fear of social exclusion on FOMO.

TABLE 1: Social media use items and statistics.

Item	<i>M</i> ( <i>SD</i> )
(1) Check your Facebook page or other social networks	6.70 (2.26)
(2) Check your social network page from your smartphone	6.79 (2.37)
(3) Check social networks at work or school	6.27 (2.45)
(4) Post status updates	2.75 (1.92)
(5) Post photos	2.85 (1.73)
(6) Browse profiles and photos	5.30 (2.35)
(7) Read postings	6.28 (2.34)
(8) Comment on postings, status updates, photos, etc.	4.27 (2.34)
(9) Click “like” to a posting, photo, etc.	6.07 (2.54)
(10) Check your social networks to find out where the parties or social gatherings are	3.28 (2.38)
(11) Post photos from the parties/social gatherings you go to	2.57 (1.90)
(12) Comment or like photos of friends’ parties/social gatherings	3.87 (2.44)

estimated and then respecified to take into account the validity of the factorial structure and potential residual covariances. Structural paths were subsequently added to the best-fitting measurement model and respecified by deleting nonsignificant paths and adding parameters deemed to be significant based on modification indices’ recommendations. For each respecification, a chi-squared difference test, also known as the likelihood ratio test, was calculated using a formula correcting for MLM estimation ( $MLM\Delta\chi^2$ ) [95, 96]. Parameters were retained only if they significantly improved the model fit, meaning that they resulted in significant  $MLM\Delta\chi^2$ .

Goodness of model fit was evaluated using the chi-squared test, comparative fit index (CFI), and root mean square error of approximation (RMSEA) with its 90% confidence interval. Good model fit is typically indicated by lower and nonsignificant values of chi square and values that are greater than .90 on the CFI and TLI, equal to or less than .06 on the RMSEA, and less than .08 on the SRMR. It is worth noting that the chi-squared values tend to be large

and significant in moderate and big sample sizes, and so, the model fit normally takes all other fit indices into account [96].

Mplus was also used to test the proposed indirect effect. Analysis of mediation effects in a structural equation modeling context has the advantages of (a) allowing for the simultaneous modeling of many variables, (b) obtaining model fit indices, and (c) eliminating the measurement error that is present in the traditional multiple regression analysis [96]. Mediation effects were tested using the model INDIRECT command and were reported using 95% bootstrapped confidence intervals.

#### 4. Results

The SPSS *t*-test showed that gender significantly predicted the need to belong  $t(415) = -4.09, p < .001$ , perceived centrality  $t(394.8) = -2.91, p < .05$ , fear of social exclusion  $t(405) = -2.21, p < .05$ , social media use  $t(366) = -3.70, p < .001$ , and FOMO  $t(459) = -3.42, p < .001$  (see Table 2). Females

TABLE 2: *t*-test results comparing males and females on need to belong, social media use, perceived centrality, fear of social exclusion, and FOMO.

	Gender				<i>t</i>	df	MD
	Males ( <i>n</i> = 154)		Females ( <i>n</i> = 308)				
	<i>M</i>	<i>SD</i>	<i>M</i>	<i>SD</i>			
(1) Need to belong	4.083	1.040	4.493	1.003	-4.092***	415	-0.410
(2) Social media use	4.321	1.755	4.967	1.490	-3.695***	366	-0.646
(3) Perceived centrality	5.566	1.211	5.888	1.012	-2.914*	394.79	-0.322
(4) Fear of social exclusion	3.456	1.789	3.852	1.816	-2.214*	405	-0.396
(5) FOMO	3.251	1.248	3.646	1.227	-3.419***	459	-0.395

Notes. \* $p \leq .05$ , \*\*\* $p \leq .01$ . Cases were deleted listwise.

TABLE 3: Correlation matrix of gender, need to belong, social media use, perceived centrality, perceived affect, fear of social exclusion, and FOMO.

Variable	1	2	3	4	5	6	7
Female	—						
Need to belong	.197**	—					
Social media use	.195**	.373**	—				
Perceived centrality	.155**	.179**	.174**	—			
Perceived affect	.120*	.145**	.128*	.867**	—		
Fear of social exclusion	.109*	.543**	.206**	-.033	-.056	—	
FOMO	.158**	.644**	.414**	.084**	.054	.463**	—

\*\*Correlation is significant at the 0.01 level (2-tailed). \*Correlation is significant at the 0.05 level (2-tailed).

reported a greater need to belong ( $M = 4.49$ ,  $SD = 1.00$ ), higher perceived group centrality ( $M = 5.89$ ,  $SD = 1.01$ ), more fear of social exclusion ( $M = 3.85$ ,  $SD = 1.82$ ), more social media use ( $M = 4.97$ ,  $SD = 1.49$ ), and generally more FOMO ( $M = 3.65$ ,  $SD = 1.23$ ) than males ( $M = 4.08$ ,  $SD = 1.04$ ;  $M = 5.57$ ,  $SD = 1.21$ ;  $M = 3.46$ ,  $SD = 1.79$ ;  $M = 4.32$ ,  $SD = 1.76$ ;  $M = 3.25$ ,  $SD = 1.25$ , respectively).

The correlation matrix (see Table 3) confirms that gender is significantly related to all variables in this section. Moreover, perceived centrality was not significantly related to FOMO but was strongly correlated with the need to belong, fear of social exclusion, and social media use. The linear regression analysis substantiated these findings, indicating that FOMO can be significantly predicted by the need to belong ( $\beta = .545$ ,  $p < .001$ ), fear of social exclusion ( $\beta = .189$ ,  $p < .001$ ), and social media use ( $\beta = .162$ ,  $p < .001$ ). Contrary to the predictions, perceived group centrality failed to significantly predict FOMO ( $\beta = .007$ ,  $p > .05$ ).

Confirming the significant contribution of the need to belong and fear of social exclusion to the experience of FOMO, the next step was to test the proposed model in Mplus. Given the aforementioned evidence of gender differences in the model variables, gender was statistically added as a control variable in the model. Gender weights were used to correct for any bias that might be caused by the larger female sample size. The measurement model was estimated using the two-factor configuration of perceived group centrality and affection (see Figure 2); structural paths were added and respecified as necessary, resulting in the model shown in Figure 3.

The depicted model provided an acceptable fit,  $MLM\chi^2(786) = 1389.289$ ,  $p < .001$ ,  $RMSEA = .046$  (90%CI = .042, .050,  $p = .953$ ),  $CFI = .936$ ,  $TLI = .930$ ,  $SRMR = .078$ .

As can be seen in the model depicted in Figure 3, females reported higher need to belong ( $\beta = .224$ ,  $p < .05$ ), more social media use ( $\beta = .102$ ,  $p < .05$ ), and more perceived centrality ( $\beta = .124$ ,  $p < .05$ ). The need to belong emerged as the strongest predictor of FOMO ( $\beta = .668$ ,  $p < .05$ ). Perceived centrality and perceived affect were not directly associated with FOMO. Moreover, fear of social exclusion failed to significantly predict FOMO,  $\beta = .027$ ,  $p > .05$ . The model explained over 60% of the variance in FOMO.

Mediation analysis, using bootstrapped 95% confidence intervals, confirmed the proposed indirect effect between the need to belong and FOMO via social media use,  $\beta = .061$ ,  $SE = .019$ ,  $p < .05$  (95%CI = .024, .105). The mediation analysis further showed a significant indirect effect of gender (i.e., female) on FOMO via the need to belong,  $\beta = .142$ ,  $SE = .032$ ,  $p < .001$  (95%CI = .067, .218), as well as of gender on FOMO via the small yet significant serial mediation of the need to belong and social media use,  $\beta = .013$ ,  $SE = .005$ ,  $p < .001$  (95%CI = .004, .029). These significant mediation results indicate that individuals with greater belonging needs are more likely to use social media and, consequently, experience more FOMO. Furthermore, females reported a higher need for belonging and, subsequently, FOMO. Additionally, the positive effect of gender on FOMO operates through the need to belong and social media use, with females reporting a greater need for belonging, opting for

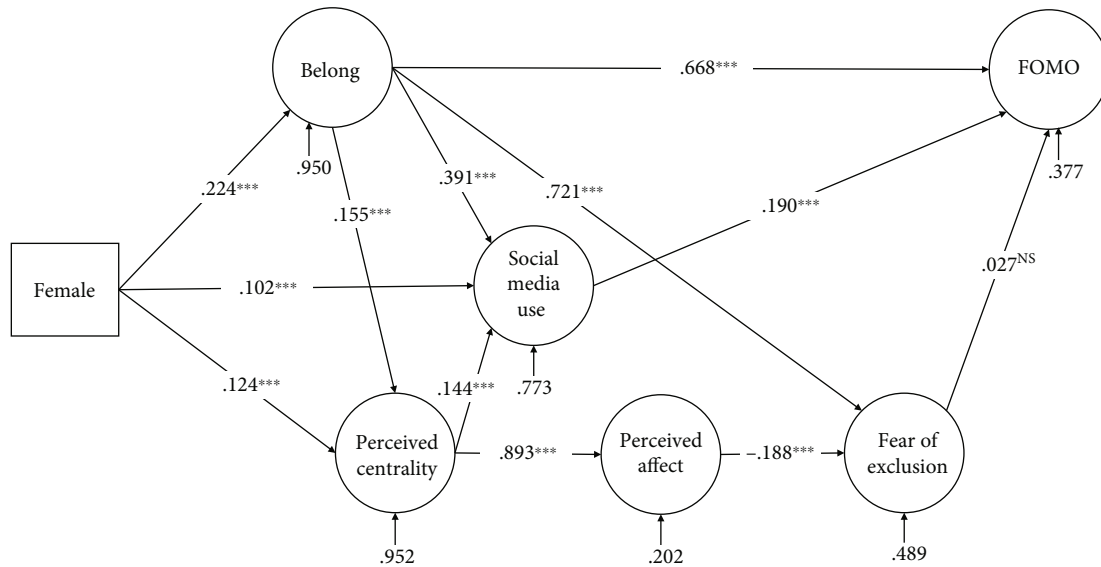


FIGURE 3: The SEM model: effects of gender (female), the need to belong (belong), social media use (SocMed), perceived centrality (Per.Cent.), perceived affect (Per.Aff.), and fear of social exclusion (FearExc) on FOMO; \*\*\* $p \leq .001$ ; NS = nonsignificant.

more social media use, and, as a result, reporting more FOMO. However, the indirect effect linking the need to belong with FOMO through perceived centrality was not significant. Similarly, the mediated paths linking perceived centrality and FOMO through (a) social media and (b) perceived affect and fear of social exclusion were also nonsignificant ( $p > .05$ ).

## 5. Discussion and Conclusions

The study is aimed at further extending previous research on the general fear of missing out (FOMO) by investigating the effects of the need to belong, perceived centrality, and fear of social exclusion. The need to belong emerged as the best predictor of FOMO, accounting for more than 44% of the total explained variance. Participants with a higher need to belong reported significantly more fear of missing out. In addition to the direct effect, the need to belong positively predicted FOMO via social media use, such that participants with higher need to belong reported more social media use, which, in turn, heightened their FOMO experience. These findings echo previous research conclusions, further affirming the pervasive influence of the need to belong in increasing both surveillance for social opportunities and exerted efforts for both group inclusion [68, 70, 72, 73, 80, 97], social media use [91, 98], and FOMO [40, 55]. Social media offers a platform for social interaction and opportunities to fulfill the need to belong, but it also brings the risk of social comparison concerns, which are often portrayed as FOMO [33, 73]. Moreover, consistent with the literature [33, 41, 99], females reported greater need to belong and social media use and consequently more FOMO.

This research provided an additional empirical assessment of the influence of socially driven factors on FOMO. The literature has validated the link between fundamental psychologi-

cal needs and FOMO [25, 26, 33, 37, 43, 44]. Based on the results of the study, it is fair to conclude that the need to belong largely determines the feelings of fear of missing out in the social context. Taken together, these findings all point to an underlying human desire for social connection, which, when unsatisfied, has detrimental consequences [7].

Although not statistically significant, the impact of perceived centrality seems to be functioning indirectly via social media use, such that core members of the group are more likely to use social media and suffer fear of missing out than peripheral members. These findings further support the theoretical underpinnings of the group membership research highlighting the varying degrees of engagement between core and peripheral members [63, 77]. The fact that core members are more active and engaged in the group suggests that they might be more inclined to use social media and consequently experience greater FOMO. However, since this is the first empirical examination of the effects of perceived centrality and fear of social exclusion on FOMO, further research is necessary to corroborate these findings.

Contrary to the proposed hypothesis and despite the significant effect in the regression analysis ( $\beta = .189, p < .001$ ), fear of social exclusion failed to significantly predict FOMO. This could be due to the equivocal probability that fear of social exclusion could prompt individuals to either seek or avoid in-group inclusion. That is, among those who are threatened with social exclusion, individuals who are seeking social acceptance within their social network of friends are more likely to experience FOMO than individuals who do not seek such inclusion. In other words, FOMO might be contingent on the individual's identification with a respective group and aspiration for more inclusion. This theorizing is in line with the core premise proposed by Ellemers and Jetten [77] stating that "core membership is not always the most desired end-state" for peripheral or marginal members. Given that group inclusion is not the end result for some

individuals, witnessing the rewarding experiences that others have may not provoke any feeling of missing out. Future studies should further investigate the impact of individual aspirations for group inclusion on the experience of FOMO.

Despite taking every precaution to assure the study's validity and reliability, there were a number of inevitable methodological constraints. Firstly, considering the novelty of the scope of this study, there was little academic research to guide the perceived centrality of fear of exclusion premises of the study. Results provided preliminarily tentative evidence for the mechanism of FOMO in a social context. Moreover, the results are all correlational; thus, they should not be used to claim causal relationships. Replication studies with various experimental and longitudinal designs are highly recommended to validate the results and corroborate the causality between these factors. Furthermore, although the sample size of this study ( $N = 490$ ) is considered statistically adequate [100, 101], its gender make-up was unequal, with a 2:3 male-female ratio. In addition, all study measures relied on self-reported data; thus, it might be tainted with cognitive, affective, and social desirability biases. Considering that FOMO can operate as a fluctuating impulse [25, 102], it is likely that it becomes more prevailing in situational contexts where participants engage in real social activities or when they authentically browse their own social media networks with groups they identify with. Therefore, the retrospective self-measure adopted by the study may not have accurately captured the true fleeting nature and magnitude of FOMO. Three potential situational characteristics have been proposed to predict FOMO: (a) favorability of missed events, (b) self-relevance of missed experiences, and (c) popularity of missed experiences. To experience FOMO, the missed event must be perceived as pleasant and desirable, self-relevant, and popular [103]. Future studies should examine and experimentally validate the effects of these characteristics on the authentic experience of FOMO.

Notwithstanding these limitations, this study offers some unique contributions. By focusing on the general fear of missing out, it has contributed not only to the redemption of this ubiquitous concept in the scholarly realm but also to the understanding of the intertwined social and psychological factors that trigger it. The results of this study indicate that FOMO is primarily driven by the need to belong. The robust positive association between the need to belong and FOMO helps to refine our understanding of the internal processes that are often experienced in response to social cues. Such understanding of internal processes is integral to deciphering the often-presumed direct links between the need to belong and a wide range of outcomes at various levels of attention, attitudes, and behavior. For instance, the need to belong was identified as a key driver behind females' decision to join gangs [104]. However, the link between these two variables could also be mediated by FOMO, and if that is the case, interventions should capitalize on the human need for connection and target the need to belong as well as the general fear of missing out.

Furthermore, a unique contribution of this study is the empirical validation of social media use in mediating the positive link between the need to belong and FOMO. The

mediating effect of social media use might prove useful for media literacy specialists whose aim is to promote healthy engagement with social media. As social media platforms continue to evolve and dominate our perceptions, emotions, and behaviors, it is critical that young users receive formal education on the gains and drawbacks of social media. Furthermore, as schools and colleges increasingly rely on social media to engage prospective and current students [105, 106], educators and administrators must understand the social and motivational factors underpinning social media engagement and the subsequent experience of FOMO and must address the limitations of social media in creating a healthy and inclusive educational environment for all students [107].

The findings of this study can also contribute to raising awareness of the psychological effects of social media use, especially in regard to social comparison and the inevitable anxieties it causes. Its findings come amid unprecedented US congressional worries over social media's influence [108]. Facebook whistleblower Frances Huguen testified before a Senate Commerce subcommittee on how algorithms on Facebook and Instagram entice younger users and exacerbate their insecurities. The rising evidence of social media's negative effects on teenage users has prompted calls for social media to be mended and used to improve general well-being [61, 109]. If fixing social media proves to be unfeasible in the near future, one may at least educate users on how their online social media engagement is influenced by metrics designed to increase their addictiveness and how social media content can affect their perceptions and psychological well-being.

## Data Availability

The datasets used and analyzed during the current study are available from the corresponding author on reasonable request.

## Conflicts of Interest

The author declares no competing interest.

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## References

- [1] D. Meshi, D. I. Tamir, and H. R. Heekeren, "The emerging neuroscience of social media," *Trends in Cognitive Sciences*, vol. 19, no. 12, pp. 771–782, 2015.
- [2] Pew Research Center, "Social media use in 2021 [report]," Pew Research Center, 2021, <http://www.pewresearch.org/internet/2021/04/07/social-media-use-in-2021/>.
- [3] K. Gilsonen, *2019 in review: social media is changing, and it's not a bad thing*, Globalwebindex, 2019, <http://globalwebindex.com/trends/2019-in-review-social-media/>.
- [4] P. Ifinedo, "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*, vol. 36, pp. 192–206, 2016.
- [5] W. C. Jacobsen and R. Forste, “The wired generation: academic and social outcomes of electronic media use among university students,” *Cyberpsychology, Behavior and Social Networking*, vol. 14, pp. 275–280, 2011.
  - [6] T. Wheelwright, “Cell phone behavior in 2021: how obsessed are we?,” *Review*, 2022, <http://www.reviews.org/mobile/cell-phone-addiction/>.
  - [7] R. F. Baumeister and M. R. Leary, “The need to belong: desire for interpersonal attachments as a fundamental human motivation,” *Psychological Bulletin*, vol. 117, p. 497, 1995.
  - [8] W. B. Chiou, C. C. Lee, and D. C. Liao, “Facebook effects on social distress: priming with online social networking thoughts can alter the perceived distress due to social exclusion,” *Computers in Human Behavior*, vol. 49, pp. 230–236, 2015.
  - [9] G. F. Khan, B. Swar, and S. K. Lee, “Social media risks and Benefits,” *Social Science Computer Review*, vol. 32, no. 5, pp. 606–627, 2014.
  - [10] D. Liu, S. E. Ainsworth, and R. F. Baumeister, “A meta-analysis of social networking online and social capital,” *Review of General Psychology*, vol. 20, pp. 369–391, 2016.
  - [11] J. Maclean, Y. Al-Saggaf, and R. Hogg, “Instagram photo sharing and its relationships with social rewards and well-being,” *Human Behavior and Emerging Technologies*, vol. 2, no. 3, pp. 242–250, 2020.
  - [12] S. Reich and P. Vorderer, “Individual differences in need to belong in users of social networking sites,” *Communication and Community*, vol. 129, 2013.
  - [13] J. D. Shapka, “Adolescent technology engagement: it is more complicated than a lack of self-control,” *Human Behavior and Emerging Technologies*, vol. 1, no. 2, pp. 103–110, 2019.
  - [14] Y. Cheng and J. Meng, “The association between depression and problematic smartphone behaviors through smartphone use in a clinical sample,” *Human Behavior and Emerging Technologies*, vol. 3, no. 3, pp. 441–453, 2021.
  - [15] A. J. Holte and F. R. Ferraro, “Tethered to texting: reliance on texting and emotional attachment to cell phones,” *Current Psychology*, vol. 40, pp. 1–8, 2021.
  - [16] J. Nie, P. Wang, and L. Lei, “Why can’t we be separated from our smartphones? The vital roles of smartphone activity in smartphone separation anxiety,” *Computers in Human Behavior*, vol. 109, p. 106351, 2020.
  - [17] J. P. Abel, C. L. Buff, and S. A. Burr, “Social media and the fear of missing out: scale development and assessment,” *Journal of Business & Economics Research (Online)*, vol. 14, p. 33, 2016.
  - [18] D. Ahn and D. H. Shin, “Is the social use of media for seeking connectedness or for avoiding social isolation? Mechanisms underlying media use and subjective well-being,” *Computers in Human Behavior*, vol. 29, pp. 2453–2462, 2013.
  - [19] S. M. Clor-Proell, R. D. Guggenmos, and K. Rennekamp, “Mobile devices and investment news apps: the effects of information release, push notification, and the fear of missing out,” *The Accounting Review*, vol. 95, pp. 95–115, 2020.
  - [20] S. L. Dailey, K. Howard, S. M. Roming, N. Ceballos, and T. Grimes, “A biopsychosocial approach to understanding social media addiction,” *Human Behavior and Emerging Technologies*, vol. 2, no. 2, pp. 158–167, 2020.
  - [21] D. A. de Vries, A. M. Möller, M. S. Wieringa, A. W. Eigenraam, and K. Hamelink, “Social comparison as the thief of joy: emotional consequences of viewing strangers’ Instagram posts,” *Media Psychology*, vol. 21, pp. 222–245, 2018.
  - [22] S. E. Domoff, R. P. Foley, and R. Ferkel, “Addictive phone use and academic performance in adolescents,” *Human Behavior and Emerging Technologies*, vol. 2, no. 1, pp. 33–38, 2020.
  - [23] E. Donnelly and D. J. Kuss, “Depression among users of social networking sites (SNSs): the role of SNS addiction and increased usage,” *Journal of Addiction and Preventive Medicine*, vol. 1, p. 107, 2016.
  - [24] S. B. Mackson, P. M. Brochu, and B. A. Schneider, “Instagram: friend or foe? The application’s association with psychological well-being,” *New Media & Society*, vol. 21, pp. 2160–2182, 2019.
  - [25] M. Milyavskaya, M. Saffran, N. Hope, and R. Koestner, “Fear of missing out: prevalence, dynamics, and consequences of experiencing FOMO,” *Motivation and Emotion*, vol. 42, pp. 725–737, 2018.
  - [26] U. Oberst, E. Wegmann, B. Stodt, M. Brand, and A. Chamarro, “Negative consequences from heavy social networking in adolescents: the mediating role of fear of missing out,” *Journal of Adolescence*, vol. 55, pp. 51–60, 2017.
  - [27] S. R. Rosenthal, J. Zhou, and S. T. Booth, “Association between mobile phone screen time and depressive symptoms among college students: a threshold effect,” *Human Behavior and Emerging Technologies*, vol. 3, no. 3, pp. 432–440, 2021.
  - [28] T. Ryan, K. A. Allen, D. L. Gray, and D. M. McInerney, “How social are social media? A review of online social behaviour and connectedness,” *Journal of Relationships Research*, vol. 8, 2017.
  - [29] B. I. Seu, “Shameful selves: women’s feelings of inadequacy and constructed façades,” *European Journal of Psychotherapy, Counselling and Health*, vol. 8, no. 3, pp. 285–303, 2006.
  - [30] J. M. Twenge, B. H. Spitzberg, and W. K. Campbell, “Less in-person social interaction with peers among U.S. adolescents in the 21st century and links to loneliness,” *Journal of Social and Personal Relationships*, vol. 36, no. 6, pp. 1892–1913, 2019.
  - [31] J. Chae, “Reexamining the relationship between social media and happiness: the effects of various social media platforms on reconceptualized happiness,” *Telematics and Informatics*, vol. 35, no. 6, pp. 1656–1664, 2018.
  - [32] L. Dossey, “FOMO, digital dementia, and our dangerous experiment,” *Explore: The Journal of Science and Healing*, vol. 10, no. 2, pp. 69–73, 2014.
  - [33] A. K. Przybylski, K. Murayama, C. R. DeHaan, and V. Gladwell, “Motivational, emotional, and behavioral correlates of fear of missing out,” *Computers in Human Behavior*, vol. 29, pp. 1841–1848, 2013.
  - [34] Z. Vally, A. M. Alghraibeh, and J. D. Elhai, “Severity of depression and anxiety in relation to problematic smartphone use in the United Arab Emirates: the mediational roles of rumination and fear of missing out,” *Human Behavior and Emerging Technologies*, vol. 3, no. 3, pp. 423–431, 2021.
  - [35] C. A. Wolniewicz, M. F. Tiamiyu, J. W. Weeks, and J. D. Elhai, “Problematic smartphone use and relations with negative affect, fear of missing out, and fear of negative and positive evaluation,” *Psychiatry Research*, vol. 262, pp. 618–623, 2018.
  - [36] J. Al-Menayes, “The fear of missing out scale: validation of the Arabic version and correlation with social media

- addiction,” *International Journal of Applied Psychology*, vol. 6, no. 2, pp. 41–46, 2016.
- [37] S. L. Buglass, J. F. Binder, L. R. Betts, and J. D. Underwood, “Motivators of online vulnerability: the impact of social network site use and FOMO,” *Computers in Human Behavior*, vol. 66, pp. 248–255, 2017.
- [38] J. D. Elhai, J. C. Levine, A. M. Alghraibeh, A. Alafnan, A. Aldraiweesh, and B. J. Hall, “Fear of missing out: testing relationships with negative affectivity, online social engagement, and problematic smartphone use,” *Computers in Human Behavior*, vol. 89, pp. 289–298, 2018.
- [39] J. D. Elhai, J. C. Levine, R. D. Dvorak, and B. J. Hall, “Fear of missing out, need for touch, anxiety and depression are related to problematic smartphone use,” *Computers in Human Behavior*, vol. 63, pp. 509–516, 2016.
- [40] C. Lai, D. Altavilla, A. Ronconi, and P. Aceto, “Fear of missing out (FOMO) is associated with activation of the right middle temporal gyrus during inclusion social cue,” *Computers in Human Behavior*, vol. 61, pp. 516–521, 2016.
- [41] M. A. Throuvala, H. M. Pontes, I. Tsaousis, M. D. Griffiths, M. Rennoldson, and D. J. Kuss, “Exploring the dimensions of smartphone distraction: development, validation, measurement invariance, and latent mean differences of the smartphone distraction scale (SDS),” *Frontiers in Psychiatry*, vol. 12, p. 199, 2021.
- [42] S. K. Kim, S. Y. Kim, and H. B. Kang, “An analysis of the effects of smartphone push notifications on task performance with regard to smartphone overuse using ERP,” *Computational Intelligence and Neuroscience*, vol. 2016, Article ID 5718580, 8 pages, 2016.
- [43] D. Blackwell, C. Leaman, R. Tramposch, C. Osborne, and M. Liss, “Extraversion, neuroticism, attachment style and fear of missing out as predictors of social media use and addiction,” *Personality and Individual Differences*, vol. 116, pp. 69–72, 2017.
- [44] J. D. Elhai, D. Rozgonjuk, T. Liu, and H. Yang, “Fear of missing out predicts repeated measurements of greater negative affect using experience sampling methodology,” *Journal of Affective Disorders*, vol. 262, pp. 298–303, 2020.
- [45] B. C. Riordan, J. A. Flett, L. M. Cody, T. S. Conner, and D. Scarf, “The fear of missing out (FOMO) and event-specific drinking: the relationship between FOMO and alcohol use, harm, and breath alcohol concentration during orientation week,” *Current Psychology*, vol. 40, no. 8, pp. 3691–3701, 2021.
- [46] B. C. Riordan, J. A. Flett, J. A. Hunter, D. Scarf, and T. S. Conner, “Fear of missing out (FOMO): the relationship between FOMO, alcohol use, and alcohol-related consequences in college students,” *Annals of Neuroscience and Psychology*, vol. 2, no. 1, pp. 1–7, 2015.
- [47] A. Błachnio and A. Przepiórka, “Facebook intrusion, fear of missing out, narcissism, and life satisfaction: a cross-sectional study,” *Psychiatry Research*, vol. 259, pp. 514–519, 2018.
- [48] C. A. Wolniewicz, D. Rozgonjuk, and J. D. Elhai, “Boredom proneness and fear of missing out mediate relations between depression and anxiety with problematic smartphone use,” *Human Behavior and Emerging Technologies*, vol. 2, no. 1, pp. 61–70, 2020.
- [49] D. Alt, “College students’ academic motivation, media engagement and fear of missing out,” *Computers in Human Behavior*, vol. 49, pp. 111–119, 2015.
- [50] I. Beyens, E. Frison, and S. Eggermont, “‘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*, vol. 64, pp. 1–8, 2016.
- [51] M. A. Fabris, D. Marengo, C. Longobardi, and M. Settanni, “Investigating the links between fear of missing out, social media addiction, and emotional symptoms in adolescence: the role of stress associated with neglect and negative reactions on social media,” *Addictive Behaviors*, vol. 106, p. 106364, 2020.
- [52] V. Franchina, M. Vanden Abeele, A. van Rooij, G. Lo Coco, and L. De Marez, “Fear of missing out as a predictor of problematic social media use and phubbing behavior among Flemish adolescents,” *International Journal of Environmental Research and Public Health*, vol. 15, no. 10, p. 2319, 2018.
- [53] Y. Sela, M. Zach, Y. Amichay-Hamburger, M. Mishali, and H. Omer, “Family environment and problematic internet use among adolescents: the mediating roles of depression and fear of missing out,” *Computers in Human Behavior*, vol. 106, p. 106226, 2020.
- [54] P. Wang, X. Wang, J. Nie et al., “Envy and problematic smartphone use: the mediating role of FOMO and the moderating role of student-student relationship,” *Personality and Individual Differences*, vol. 146, pp. 136–142, 2019.
- [55] P. Wang, X. Xie, X. Wang et al., “The need to belong and adolescent authentic self-presentation on SNSs: a moderated mediation model involving FoMO and perceived social support,” *Personality and Individual Differences*, vol. 128, pp. 133–138, 2018.
- [56] L. Yin, P. Wang, J. Nie, J. Guo, J. Feng, and L. Lei, “Social networking sites addiction and FoMO: the mediating role of envy and the moderating role of need to belong,” *Current Psychology*, vol. 40, pp. 1–9, 2019.
- [57] Z. Yan, “A basic model of human behavior with technologies,” *Human Behavior and Emerging Technologies*, vol. 2, no. 4, pp. 410–415, 2020.
- [58] G. Lo Coco, L. Salerno, V. Franchina, A. la Tona, M. di Blasi, and C. Giordano, “Examining bi-directionality between fear of missing out and problematic smartphone use. A two-wave panel study among adolescents,” *Addictive Behaviors*, vol. 106, p. 106360, 2020.
- [59] D. Kardefelt-Winther, “A conceptual and methodological critique of internet addiction research: towards a model of compensatory internet use,” *Computers in Human Behavior*, vol. 31, pp. 351–354, 2014.
- [60] J. Holt-Lunstad, T. B. Smith, and J. B. Layton, “Social relationships and mortality risk: a meta-analytic review,” *PLoS Medicine*, vol. 7, no. 7, article e1000316, 2010.
- [61] E. A. Vincent, “Social media as an avenue to achieving sense of belonging among college students,” *Vistas Online*, pp. 1–14, 2016.
- [62] R. Baumeister, “The need-to-belong theory,” *Handbook of Theories of Social Psychology*, vol. 2, pp. 121–140, 2011.
- [63] W. S. Jansen, S. Otten, K. I. van der Zee, and L. Jans, “Inclusion: conceptualization and measurement,” *European Journal of Social Psychology*, vol. 44, pp. 370–385, 2014.
- [64] K. A. Allen, G. Arslan, H. Craig, S. Arefi, A. Yaghoobzadeh, and H. Sharif Nia, “The psychometric evaluation of the sense of belonging instrument (SOBI) with Iranian older adults,” *BMC Geriatrics*, vol. 21, no. 1, pp. 1–8, 2021.

- [65] G. Arslan, "Understanding the association between school belonging and emotional health in adolescents," *International Journal of Educational Psychology*, vol. 7, no. 1, pp. 21–41, 2018.
- [66] E. Paravati, E. Naidu, and S. Gabriel, "From "love actually" to love, actually: the sociometer takes every kind of fuel," *Self and Identity*, vol. 20, pp. 6–24, 2021.
- [67] E. J. Parr, I. M. Shochet, W. D. Cockshaw, and R. L. Kelly, "General belonging is a key predictor of adolescent depressive symptoms and partially mediates school belonging," *School Mental Health*, vol. 12, pp. 626–637, 2020.
- [68] C. N. DeWall, T. Deckman, R. S. Pond, and I. Bonser, "Belongingness as a core personality trait: how social exclusion influences social functioning and personality expression," *Journal of Personality*, vol. 79, pp. 1281–1314, 2011.
- [69] A. Dykman, *The fear of missing out*, Forbes, 2012, <http://www.forbes.com/sites/moneybuilder/2012/03/21/the-fear-of-missing-out/>.
- [70] C. L. Pickett, W. L. Gardner, and M. Knowles, "Getting a cue: the need to belong and enhanced sensitivity to social cues," *Personality and Social Psychology Bulletin*, vol. 30, pp. 1095–1107, 2004.
- [71] S. Gabriel, "Reflections on the 25th anniversary of Baumeister & Leary's seminal paper on the need to belong," *Self and Identity*, vol. 20, pp. 1–5, 2021.
- [72] W. L. Gardner, C. L. Pickett, and M. B. Brewer, "Social exclusion and selective memory: how the need to belong influences memory for social events," *Personality and Social Psychology Bulletin*, vol. 26, pp. 486–496, 2000.
- [73] P. Wang, M. Zhao, X. Wang, X. Xie, Y. Wang, and L. Lei, "Peer relationship and adolescent smartphone addiction: the mediating role of self-esteem and the moderating role of the need to belong," *Journal of Behavioral Addictions*, vol. 6, pp. 708–717, 2017.
- [74] Y. Alfasi, "The grass is always greener on my friends' profiles: the effect of Facebook social comparison on state self-esteem and depression," *Personality and Individual Differences*, vol. 147, pp. 111–117, 2019.
- [75] P. A. McCarthy and N. Morina, "Exploring the association of social comparison with depression and anxiety: a systematic review and meta-analysis," *Clinical Psychology & Psychotherapy*, vol. 27, pp. 640–671, 2020.
- [76] J. Roth, M. C. Steffens, and V. L. Vignoles, "Group membership, group change, and intergroup attitudes: a recategorization model based on cognitive consistency principles," *Frontiers in Psychology*, vol. 9, p. 479, 2018.
- [77] N. Ellemers and J. Jetten, "The many ways to be marginal in a group," *Personality and Social Psychology Review*, vol. 17, pp. 3–21, 2013.
- [78] M. A. Hogg, "Social categorization, depersonalization, and group behavior," in *Self and social identity*, M. B. Brewer and M. Hewstone, Eds., pp. 203–231, Blackwell Publishing, 2004.
- [79] M. A. Hogg, L. Cooper Shaw, and D. W. Holzworth, "Group prototypically and depersonalized attraction in small interactive groups," *Personality and Social Psychology Bulletin*, vol. 19, pp. 452–465, 1993.
- [80] R. F. Baumeister, C. N. DeWall, N. J. Ciarocco, and J. M. Twenge, "Social exclusion impairs self-regulation," *Journal of Personality and Social Psychology*, vol. 88, p. 589, 2005.
- [81] J. B. Beekman, M. L. Stock, and G. W. Howe, "Stomaching rejection: self-compassion and self-esteem moderate the impact of daily social rejection on restrictive eating behaviours among college women," *Psychology & Health*, vol. 32, pp. 1348–1370, 2017.
- [82] F. M. Schneider, B. Zwillich, M. J. Bindl, F. R. Hopp, S. Reich, and P. Vorderer, "Social media ostracism: the effects of being excluded online," *Computers in Human Behavior*, vol. 73, pp. 385–393, 2017.
- [83] J. K. Maner, C. N. DeWall, R. F. Baumeister, and M. Schaller, "Does social exclusion motivate interpersonal reconnection? Resolving the "porcupine problem"," *Journal of Personality and Social Psychology*, vol. 92, p. 42, 2007.
- [84] M. R. Leary, "Responses to social exclusion: social anxiety, jealousy, loneliness, depression, and low self-esteem," *Journal of Social and Clinical Psychology*, vol. 9, pp. 221–229, 1990.
- [85] H. Sjøstad, M. Zhang, A. E. Masvie, and R. Baumeister, "Social exclusion reduces happiness by creating expectations of future rejection," *Self and Identity*, vol. 20, pp. 116–125, 2021.
- [86] R. Smith, J. Morgan, and C. Monks, "Students' perceptions of the effect of social media ostracism on wellbeing," *Computers in Human Behavior*, vol. 68, pp. 276–285, 2017.
- [87] J. M. Twenge, R. F. Baumeister, D. M. Tice, and T. S. Stucke, "If you can't join them, beat them: effects of social exclusion on aggressive behavior," *Journal of Personality and Social Psychology*, vol. 81, p. 1058, 2001.
- [88] J. M. Twenge, K. R. Catanese, and R. F. Baumeister, "Social exclusion and the deconstructed state: time perception, meaninglessness, lethargy, lack of emotion, and self-awareness," *Journal of Personality and Social Psychology*, vol. 85, p. 409, 2003.
- [89] E. Fox, R. Russo, R. Bowles, and K. Dutton, "Do threatening stimuli draw or hold visual attention in subclinical anxiety?," *Journal of Experimental Psychology: General*, vol. 130, no. 4, p. 681, 2001.
- [90] C. H. Hansen and R. D. Hansen, "Finding a face in the crowd: An anger superiority effect," *Journal of Personality and Social Psychology*, vol. 54, pp. 917–924, 1988.
- [91] M. R. Leary, K. M. Kelly, C. A. Cottrell, and L. S. Schreindorfer, "Construct validity of the need to belong scale: mapping the nomological network," *Journal of Personality Assessment*, vol. 95, pp. 610–624, 2013.
- [92] W. S. Jansen, S. Otten, and K. I. van der Zee, "Being part of diversity. The effects of an all-inclusive multicultural diversity approach on majority members' perceived inclusion and support for organizational diversity efforts," *Group Processes & Intergroup Relations*, vol. 18, no. 6, pp. 817–832, 2015.
- [93] L. D. Rosen, K. Whaling, L. M. Carrier, N. A. Cheever, and J. Rökkum, "The media and technology usage and attitudes scale: an empirical investigation," *Computers in Human Behavior*, vol. 29, pp. 2501–2511, 2013.
- [94] L. K. Muthén and B. O. Muthén, *Mplus User's Guide*, Muthén & Muthén, Los Angeles, CA, Seventh Edition edition, 1998.
- [95] F. B. Bryant and A. Satorra, "Principles and practice of scaled difference chi-square testing," *Structural Equation Modeling: A Multidisciplinary Journal*, vol. 19, pp. 372–398, 2012.
- [96] B. M. Byrne, *Structural Equation Modeling with Mplus: Basic Concepts, Applications, and Programming*, Routledge, 2013.

- [97] M. R. Leary, "The need to belong, the sociometer, and the pursuit of relational value: unfinished business," *Self and Identity*, vol. 20, pp. 126–143, 2021.
- [98] H. Gangadharbatla, "FacebookMe," *Journal of Interactive Advertising*, vol. 8, no. 2, pp. 5–15, 2008.
- [99] C. Chen, K. Z. Zhang, X. Gong, S. J. Zhao, M. K. Lee, and L. Liang, "Examining the effects of motives and gender differences on smartphone addiction," *Computers in Human Behavior*, vol. 75, pp. 891–902, 2017.
- [100] T. R. Hinkin, J. B. Tracey, and C. A. Enz, "Scale construction: developing reliable and valid measurement instruments," *Journal of Hospitality and Tourism Research*, vol. 21, pp. 100–120, 1997.
- [101] A. G. Yong and S. Pearce, "A beginner's guide to factor analysis: focusing on exploratory factor analysis," *Tutorial in Quantitative Methods for Psychology*, vol. 9, pp. 79–94, 2013.
- [102] V. Dogan, "Why do people experience the fear of missing out (FoMO)? Exposing the link between the self and the FoMO through self-construal," *Journal of Cross-Cultural Psychology*, vol. 50, no. 4, pp. 524–538, 2019.
- [103] C. Hayran, L. Anik, and Z. Gurhan-Canli, *Exploring the antecedents and consumer behavioral consequences of "feeling of missing out"(FOMO)*, ACR North American Advances, 2016.
- [104] L. Khan, H. Brice, A. Saunders, and A. Plumtree, *A Need to Belong: What Leads Girls to Join Gangs*, Centre for Mental Health, London, 2013.
- [105] S. M. Coyne, L. M. Padilla-Walker, and E. Howard, "Emerging in a digital world: A decade review of media use, effects, and gratifications in emerging adulthood," *Emerging Adulthood*, vol. 1, no. 2, pp. 125–137, 2013.
- [106] A. Peruta and A. B. Shields, "Social media in higher education: understanding how colleges and universities use Facebook," *Journal of Marketing for Higher Education*, vol. 27, no. 1, pp. 131–143, 2017.
- [107] D. L. Linvill, "Addressing social media dangers within and beyond the college campus," *Communication Education*, vol. 68, pp. 371–380, 2019.
- [108] R. Brandom, M. Kelly, and A. Robertson, *Everything you need to know from the Facebook whistleblower hearing*, The Verge, 2021, <http://www.theverge.com/2021/10/5/22710539/facebook-whistleblower-hearing-instagram-child-safety-congress>.
- [109] D. Ostic, S. A. Qalati, B. Barbosa et al., "Effects of social media use on psychological well-being: a mediated model," *Frontiers in Psychology*, vol. 12, p. 2381, 2021.