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The effects of personality and social media experiences on mental health: Examining the mediating role of fear of missing out, ghosting, and vaguebooking

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ABSTRACT

The present study examined the relationships between personal characteristics, social media experiences, and mental health. We carried out an online survey of 995 adolescents and young adults, who completed self-reported questionnaires about their personal characteristics (gender, age); personality traits (need to belong, social comparison orientation, social identity, histrionic personality); frequency of social media use; and social media experiences concerning fear of missing out, being a victim of ghosting, and vaguebooking as well as mental health. We had an international sample with a strong European focus. The results, based on structural equation modeling, demonstrated that the independent variables were both directly and indirectly related to mental health. In particular, the study highlights the importance of a triad between fear of missing out, being a victim of ghosting, and vaguebooking. This triad represents a significant mediating mechanism that should be reflected in future research as well as assessment and intervention activities pertaining to social media-related mental health problems.

The use of social media changes our experiences with other people significantly. Social media use is related to social inclusion and exclusion, both of which contribute considerably to human development, especially mental health (e.g., Morgan et al., 2007). Mental health is seen as "a state of well-being in which the individual realizes his or her own abilities, can cope with the normal stresses of life, can work productively and fruitfully, and is able to make a contribution to his or her community" (World Health Organization, 2004, p. 10). Currently, multiple meta-analyses have demonstrated that on average social media use has small to moderate negative effects on mental health, but there are several heterogeneities and inconsistencies within the findings (e.g., Huang, 2020; Ivie et al., 2020; Meier & Reinecke, 2020). The evidence appears insufficient to support dramatic conclusions that social media enhances poor psychosocial functioning (e.g., Ferguson et al., 2022). There is also positive evidence, that social media allows to deal with minority experiences and receive support, that the use of social networking sites can increase mental health knowledge or that social media intervention supports self-help activities (e.g., Escobar-Viera et al., 2018; Ridout & Campbell, 2018; Zhang, Li, & Yu, 2021). Furthermore, other studies, adopting a different methodological approach by considering longitudinal studies, found that social media use has no significant effects on mental health (e.g., Coyne et al., 2020).

This ambiguity implies that future research should focus on testing models of psychological processes that mediate social media use and mental health (e.g., Cunningham et al., 2021). Such models increase the explanatory power of research and help to identify unknown factors or to integrate diffuse research findings. Existing models have distinguished between biological and social factors, psychological processes, and mental health indicators. For example, Glaser et al. (2018) concentrated on internet addiction and offline social capital, whereas Kelly et al. (2018) included poor sleep, online harassment, poor self-esteem, and body image in their model. Zhao and Zhou (2020) considered external and internal stressors, negative effects, and medical history. Others explored emotional regulation strategies (cognitive reappraisal and expressive suppression), sometimes as independent and sometimes as mediating variables (Rasmussen et al., 2020; Yang et al., 2020). Dailey et al. (2020) considered biological and social factors, like gender, social media use intensity, the need for social media, and social comparisons, as well as psychological factors, like self-esteem. Moreover, other researchers included factors like attachment and personality traits (such as psychopathy) as well as relationship satisfaction (Demircioğlu & Köse, 2021).

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Based on these highly diverse backgrounds, it can be concluded that social media use and the related psychological processes represent important mediating variables between personality factors and mental health. Recently, three important phenomena have appeared in social media research as mediating psychological processes: fear of missing out, ghosting, and vaguebooking. These three processes are linked to important motivations for social media use like self-presentation and belonging (e.g., Seidman, 2013), both of which in turn have a significant impact on mental health and well-being (e.g., Smith et al., 2021; Twomey & O'Reilly, 2017). Fear of missing out is related to belonging and represents "a pervasive apprehension that others might be having rewarding experiences from which one is absent" and "is characterized by the desire to stay continually connected with what others are doing" (Przybylski et al., 2013, p. 1841). Fear of missing out has been found to be related to social identity, social comparison orientation, social media engagement, and gender as well as mental health indicators in the past (Duman & Ozkara, 2021; Elhai et al., 2016; Reer et al., 2019). Ghosting is also related to belonging and has been described as "unilaterally cutting off contact with a partner and ignoring their attempts to reach out" (Timmermans et al., 2020, p. 2). In particular, being a victim of ghosting (as a negative experience) has been found to be associated with several mental health variables (Navarro et al., 2020). Ghosting experiences as well as the need to belong push victims to restore their social status (Pancani et al., 2021). Vaguebooking is related to self-presentation and refers to "social media posts that contain little actual and clear information, but are worded in such a way as to solicit attention and concern from readers" (Berryman et al., 2018, p. 308). It has been found to be related to mental health problems (like loneliness) as well as histrionic personality (the need to be the center of attention), the need to belong (a need to form attachments and feel a sense of intimacy with others), and social media use (Berryman et al., 2019).

1. Purpose of the present study

The purpose of the present study was to examine whether social media use and related experiences, like fear of missing out, being a victim of ghosting, and vaguebooking, mediated the relationship between personal characteristics and personality traits with mental health. It was hypothesized that social media use is related to personal characteristics (gender, age) and personality traits (the need to belong, social comparison orientation, social identity, histrionic personality). Based on given research, it was hypothesized that the frequency of social media use has a positive relationship with experiences of fear of missing out, being a victim of ghosting, and vaguebooking, and that all these variables have a negative influence on mental health. In different theoretical models, it is, in general, assumed that social media experiences represent a mediating role between personality characteristics, traits, and mental health. However, it is also assumed, that personal characteristics and personality traits have a direct effect on social media experiences and mental health. These models are based on conflicting assumptions

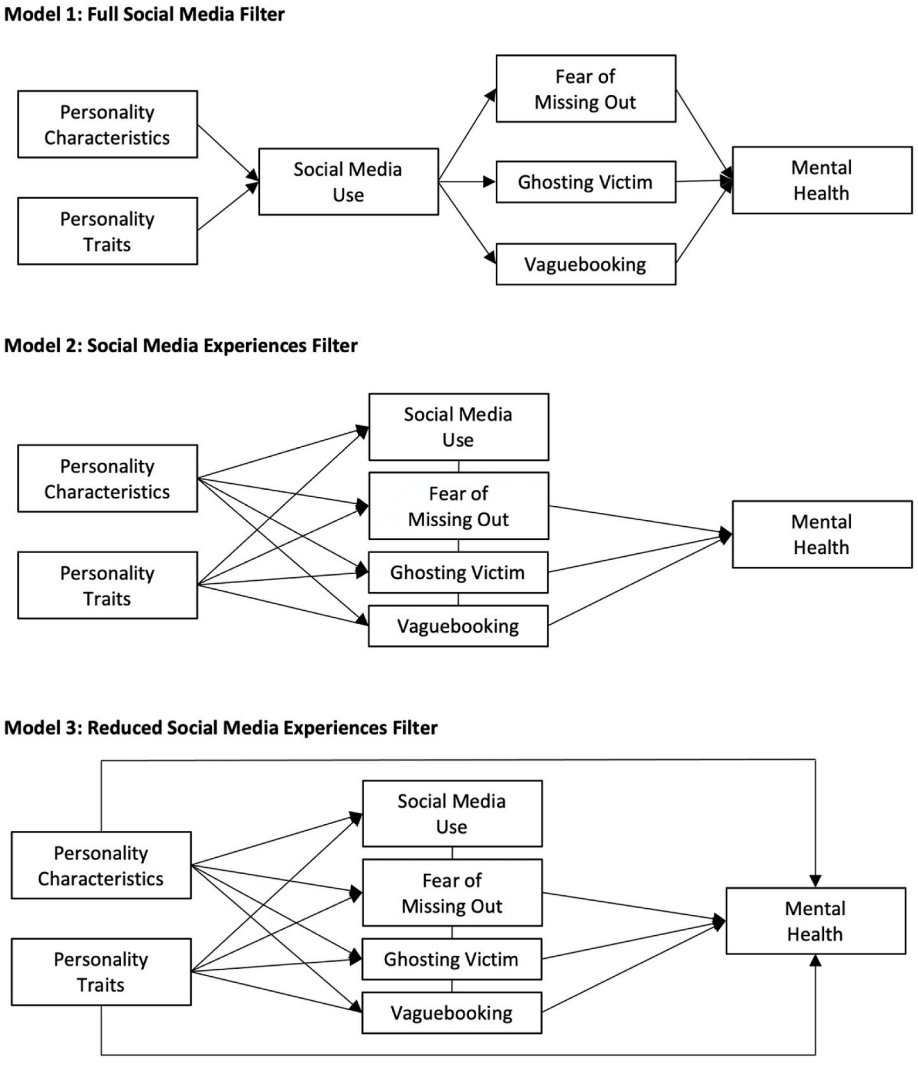

Fig. 1. Hypothetical models.

from the literature and related empirical research. We have to admit that at this early stage of research, not all of the relationships in the models are already substantiated with specific empirical research findings, which is particularly true for ghosting and vaguebooking.

In particular, Model 1 is related in its general structure to a conceptual model of transactional social media effects from Perloff (2014) (see Fig. 1). In this model, it is assumed that social media use filters the effects of personality on mental health. Based on this model, we hypothesized that using social media stimulates mediating processes, which in turn relate to mental health. Social media deliver a complex "transaction between media content and what the individual brings to media, in terms of needs, personality factors, and social situational constraints" (p. 367). Exposure to social media should relate to mediating processes like positive and negative social media experiences (based on fear of missing out, being a victim of ghosting, and vaguebooking). For example, Zhang, Lin, et al. (2021) argued that social media use reinforces cognitive, emotional, attitudinal and behavioral facets of a user, and it increases the visibility of missed activities and a sense of relative deprivation what leads to fear of missing out. We hypothesized that fear of missing out is related to mental health as it is, for example, linked to being connected with and being accepted by others what is of high importance for many people and their mental health (Oberst et al., 2017). The same might be true for ghosting as the psychological consequences (like devaluation of one's own person and one's own importance) were found generally negative for the ghostee (victim of ghosting) (Thomas & Dubar, 2021). Something similar probably applies to vaguebooking as it was found to be a stressful and emotional situation shared via social media (Knight et al., 2017). We did not assume a direct relationship between social media use and mental health due to strong evidence that an increase in time spent on social media was not associated with increased mental health issues (Coyne et al., 2020).

The expansion that can be seen in Model 2 was inspired from an approach on social media fatigue from Lee et al. (2014). In Model 2, we assumed the same relationships of Model 1, but in addition, we hypothesized that personality characteristics and traits are also directly related to social media experiences. In this way, social media experiences also act as a kind of filter between personality traits as well as characteristics and mental health. This general assumption was based on research from Lee et al. (2014) indicating significant correlations between the Big Five personality traits and social media experiences like social media fatigue (related to emotional exhaustion, depersonalization, lack of personal accomplishment, and privacy exposure risk). In particular, we assumed based on findings from Rozgonjuk et al. (2021) that age is related to fear of missing out as there are certain ages when social networking is particularly important for identity building. We also hypothesized that social comparison orientation is related to fear of missing out as indicated by findings from Servidio et al. (2021): The more people use social comparison as an orientation, the more they fear missing out. Regarding ghosting, we found at least some evidence for our assumptions that ghosting is related to dark personality traits and personality-related destiny beliefs (Freedman et al., 2019; Jonason et al., 2021). For vaguebooking, we assumed that attention seeking behavior is closely related to a histrionic personality with an unstable self-image and a strong desire to be noticed (Berryman et al., 2019).

Model 3 is generally related to an approach on personality traits and problematic media use from Kircaburun and Griffiths (2018). In Model 3, we assumed all relationships of Model 2 and in addition direct relationships between personality characteristics as well as traits and mental health. It is assumed that the filtering effect of social media use and social media experiences is changed by direct relationships between personality and mental health. We expected mental health implications due to differences in gender, age, and social personality traits and assumed that such variables affect the choice and use of coping strategies which are essential for mental health (Staneva et al., 2022).

2. Method

2.1. Participants and procedure

A total of 995 adolescents and young adults participated in this study. About 79 percent of the sample were females and 21 percent males, with an average age of 22.93 years (SD = 2.98). About 58 percent of the participants completed a German version of a questionnaire and about 42 percent an English version. Approximately 51 percent of the participants were university graduates. Participants came from 45 different countries around the world: Austria (33.6 percent), Germany (26.0), Vietnam (13.4), United Kingdom (6.2), USA (4.7), India (1.9), Canada (1.3), Sweden (1.2), France (1.2), and Malaysia (1.2) as well as Australia, Philippines, Netherlands, Poland, Italy, Hungary, Portugal, Turkey, Pakistan, Thailand, Korea, China, Singapore, Bulgaria, Latvia, Spain, Romania, Iceland, Finland, Qatar, Denmark, Serbia, Belgium, Colombia, Russia, Egypt, United Arab Emirates, Hong Kong, New Zealand, South Africa, Israel, Lithuania, Norway, Mexico, and Taiwan (all <1). Participants were invited to complete an online questionnaire implemented with LimeSurvey from September to November 2020. Links to the surveys were distributed via social networking sites, like university related Facebook groups or Instagram accounts (e.g., Pädagogikforum Salzburg, Western Sydney University, Delhi University, University of Toronto, @unisalzburg, @studycheck.de) and among friends and acquaintances of the second and third authors of this study via their private social media profiles (e.g., WhatsApp, Instagram, Facebook, Snapchat, and Twitter). Originally, 1807 people answered, but only 1055 of them completed the questionnaire. Of these, 995 corresponded to the specified age limit of between 18 and 29 years. The data along with descriptive and mostly bivariate analyses are part of an unpublished master's thesis by the second and third authors, which was supervised by the first author (Bains & Hörmann, 2021). The survey was voluntary and could be canceled at any time. No personal information was collected. The participants had to agree to a declaration of consent for the study to be carried out and for the data to be used for scientific purposes.

2.2. Measures

The questionnaire was first formulated in German. The questionnaire was then translated into English, following the GESIS Survey Guidelines for using questionnaires in international contexts (Behr et al., 2015). The questionnaire was independently translated by the second and third authors of this study, then the two versions were compared, adapted, and integrated into one version. The English version was also checked for spelling, grammatical, and other errors by a native English speaker. If English instruments were adapted for the German questionnaire, the original formulations were largely retained. Before the questionnaire was used, it was also checked for comprehensibility by three people from our target group. The existing and previously tested instruments showed good reliability and validity, which is why we limited ourselves to testing reliability in this study. For the largely self-developed and newly developed instruments (on ghosting, vaguebooking, and mental health), we also provided validity indications on a correlative basis. Reliabilities for all measurements ranged from acceptable to excellent (Cronbach's alpha (CA) > 0.70); all indications for validity were good (see Table 1).

Personal characteristics and social media use. Participants were asked about their gender and age. Frequency of social media use was assessed with the question "How many hours per day are you active on social media? Estimate how many hours per day you use social media. (There is a possibility to see the actual screen time on your mobile phone; you can find it in the settings)." The possible answers ranged from "0–1 h," "1.01–2 h," at hourly intervals up to "8.01 h and more."

Need to belong. The measurement of the need to belong was based on the need to belong scale from Leary et al. (2013). This scale had 10 Items, such as "If other people do not seem to accept me, I do not let it

Table 1
Descriptive Statistics and Correlation Matrix (990 < n < 996).

Variables	A	B	C	D	E	F	G	H	I	J	*M, SD*	*CA*
A	-										-	-
B	−.07*	-									22.93, 2.98	-
C	.11**	−.13**	-								2.54, 0.50	.77
D	.00	−.15**	.48**	-							2.09, 0.59	.81
E	.07*	−.07*	.69**	.53**	-						2.56, 0.50	.77
F	−.14**	−.16**	.32**	.47**	.39**	-					1.85, 0.59	.71
G	.04	−.23**	.08*	.22**	.10**	.15**	-				3.98, 1.84	-
H	−.07*	−.18**	.54**	.69**	.55**	.50**	.25**	-			2.12, 0.53	.82
I	−.15**	−.13**	.25**	.44**	.37**	.44**	.26**	.47**	-		1.91, 0.55	.89
J	−.16**	−.18**	.26**	.52**	.36**	.60**	.28**	.54**	.60**	-	1.78, 0.53	.86
K	.05	.18**	−.16**	−.37**	−.12**	−.27**	−.29**	−.35**	−.44**	−.40**	3.03, 0.48	.91

Note. A = gender, B = age, C = need to belong, D = social comparison orientation, E = social identity, F = histrionic personality, G = social media use, H = fear of missing out, I = being a victim of ghosting, J = vaguebooking, K = mental health; M = mean, SD = standard deviation, CA = Cronbach's alpha; two-tailed: *p < 0.05; **p < 0.01. Correlations with gender are point-biserial. MIN to MAX for A: 1–2; B: 18–29; C, D, E, F: 1–4; G: 1–9; H, I, J, K: 1–4.

bother me." All items on this scale and on the other measurements had to be answered based on a 4-point Likert scale (ranging from *always applies* to *never applies*).

Social comparison orientation. Social comparison orientation concerns the frequency and intensity of comparison with others. It has been measured with seven self-designed items, such as "I compare myself to other people online," "I compare my own life to other people's lives on social media," "I have the impression that others have a more rewarding life than me," "I am scared of being alone when others are having fun," "I enjoy showcasing myself on social media," "my own life is less exciting than other people's lives," and "I am interested in the online lives of my friends (e.g., photos, videos, status updates, etc.)." Items were formulated and adapted in relation to the comparison and feedback-seeking subscale by Nesi (2014). We focused on general social comparisons (without specific orientations on opinions and abilities as well as downward versus upward comparisons) which are in line with mainstream research orientations in the field of social media (Verduyn et al., 2020).

Social identity. Social identity is about the personal importance of affiliation with a group and was measured with nine self-designed items. Item formulations were related to important research findings on affiliation motives (Brandstätter et al., 2018). The items were "it is very important for me to interact with people online," "being with others is very important to me," "my aim of using social media is to socialize with others," "I fear rejection," "I feel well and happy when I am around others," "I feel happy as a part of a group," "I feel miserable when I am alone," "I feel uncomfortable when I get rejected," and "it is painful to get rejected."

Histrionic personality. A histrionic personality describes a person whose self-esteem depends on the evaluation of other people. It was measured with four items from the brief histrionic personality scale (Ferguson & Negy, 2014). These items were "I like to be the center of attention," "I am more dramatic than most people," "I sometimes make up stories to get attention," and "I get frustrated when people do not notice me."

Fear of missing out. Fear of missing out concerns an anxious assumption of losing something in social contexts and of not being part of important people's lives. It was measured with 10 items from the fear of missing out scale from Przybylski et al. (2013). Items included, such as "I fear others have more rewarding experiences than me," had to be answered (modified compared to the original) on a 4-point Likert scale.

Being a victim of ghosting. Being a victim of ghosting is the experience of being ignored by others online and suffering from broken relationships. It was measured with 13 self-designed items. Item formulations were mainly inspired by a model of ostracism (being ignored or excluded by others) by William (2009) and its transformation in social media experiences. Items were "I have abruptly withdrawn from someone on social media," "without giving a reason, someone broke off online contact with me," "someone kept me waiting online, meaning that the person only reached out to me irregularly," "somebody reduced contact via social media with me for a certain period of time and then broke it off completely," "I was not able to reach the other person because the contact was abruptly ended," "my messages to somebody I was talking to online were ignored," "when I was ignored, I felt rejected," "I was excluded online by other people," "I have already dealt with an abrupt breakup of a romantic relationship on social media," "I was excluded from a group without knowing the reason," "friends or family members have ignored me over a long period of time," "others did not give me any reasons why they stopped talking to me," and "my need to belong, self-respect, and trust are strong." For validity purposes, we correlated the results of this scale with eight items from the Ostracism experience scale for adolescents from Gilman et al. (2013) with items like "in general, others look through me as if I do not exist." The scale has good reliability (CA = 0.82) and good correspondence with our scale of being a victim of ghosting ($r = 0.69$, $p < 0.001$).

Vaguebooking. Vaguebooking concerns using unclear messages to attract attention online. It was measured with 11 self-designed items. Three items for measuring vaguebooking from Berryman et al. (2019) represented the starting point for formulating these items. Items were "my posts on social media are vague," "my posts on social media are ambiguous and emotional," "I exaggerate with statements on social media to get other peoples' attention," "I want to attract attention from others with my posts," "I like to attract attention," "by posting emotional posts online I want to attract my friends' attention," "I use social media to express frustration when I have problems with others," "I use social media to solve my problems with others," "I long for emotional support on social media," "I enjoy when my friends leave comments or react to my posts," and "when somebody reacts to my posts online, I no longer feel lonely." For validity purposes, vaguebooking, according to Berryman et al. (2019), relates to attention-seeking behavior as part of a histrionic personality. We confirmed this relationship by finding a significant correlation between vaguebooking and our measurement of histrionic personality ($r = 0.60$, $p < 0.01$; see Table 1).

Mental health. Mental health is seen as the absence of psychopathology. It was measured with 22 items. Item formulations were mainly inspired by approaches on measuring well-being from the Organization for Economic Co-operation and Development (OECD, 2020). Items were "I have a good relationship with family and friends," "I feel like I am part of my family and group of friends," "belonging to my family gives me strength," "in times of need, my friends and family will stick by my side," "I spend several hours a week with family and friends," "I like to take time out of my day to talk to family members," "I feel lonely because I only have a few friends and family members who I can talk to," "I find it difficult to maintain close relationships," "it is difficult for me to find energy for things that are important to me," "I am not in the mood for activities, and I feel depressed and down," "I feel hopeless," "I suffer from sleep problems, feel tired, and lack energy," "I feel well and healthy," "I feel mentally strong," "I feel sad," "I am worried," "anger is

an emotion that I experience a lot," "joy prevails in my life, and I laugh a lot," "I feel well rested," "I am anxious, and I have already had a panic attack," "I would describe myself as a confident person," and "I feel stressed." For validation purposes, we correlated this scale with seven items from an adapted version of the mental health continuum short form scale by Keyes (2018), like "in the last months I felt"..."happy," "interested in my life," or "satisfied with life" (CA = 0.89) and found good indications of validity (r = 0.73, p < 0.001).

2.3. Statistical analyses

We used SPSS 27 for statistical analyses together with LISREL 8.8 for structural equation modeling (SEM) (Jöreskog et al., 2016). For SEM with observed variables, estimates were calculated using a maximum likelihood approach with the following fit indices: chi-square of model fit (χ^2), the comparative fit index (CFI >0.96, indicating a good model fit), the root mean square error of approximation (RMSEA <0.06 as a good fit), the standardized root mean square residual (SRMR <0.05 as well fitting), and the non-normed fit index (NNFI >0.95 as the threshold) (Hooper et al., 2008; Schermelleh-Engel et al., 2003). There were no missing values in our variables, except in a very few cases for gender. Overall, we had an acceptable normal dataset as all variables had a skewness between ±2 and a kurtosis between ±7 (0.91 > skewness > −1.44; 0.80 > kurtosis > −0.87). We did not have correlations r = 0.85 or larger, indicating no high collinearity in our variables (see Table 1). We had multivariate outliners in only 12 participants (based on Mahalanobis distance (MD) and related p-values of the chi-square distribution, calculated in SPSS) (mental health as dependent variable; 10 independent variables: df = 10; MD < 30; p < 0.001). We decided to leave them in the sample in order not to change variability in the data; Altman & Krzywinski, 2016).

3. Results

3.1. Descriptive statistics

Descriptive statistics and zero-order intercorrelations among the measured variables are shown in Table 1. On average, participants in our study reported low to moderate levels of personality traits like the need to belong, social comparison, social identity, and histrionic personality. Participants had an average time of social media use of about three to 4 h a day. Low to moderate levels were also true for fear of missing out, being a victim of ghosting, and vaguebooking. Finally, the participants in our study had on average moderate to high levels of mental health.

3.2. Testing path models

SEM was used not only to test the hypothetical model but also to find the best fitting model (see Table 2). In Model 1, the hypothetical model, it was assumed that all the measured personality traits were related to social media use. In addition, social media use should affect social media experiences, which are related to mental health. However, Model 1 did not fit the data well ($\chi^2(28) = 2085.72$, p < 0.001; RMSEA = 0.27; CFI = 0.70). In Model 2, we tested in addition to Model 1 the relationships between personality variables and social media experiences. The model fit improved considerably, but again, we did not find a good fit for the data ($\chi^2(10) = 264.60$, p < 0.001; RMSEA = 0.16; CFI = 0.96). In Model 3, the additional relationships of personality were also related to mental health, but once more, this did not fit the data well ($\chi^2(4) = 203.32$, p < 0.001; RMSEA = 0.23; CFI = 0.97).

Table 2
Summary of Model Comparisons.

Models	χ^2	df	p	CFI	RMSEA	SRMR	NNFI
Model 1	2085.72	28	<.001	0.70	0.27	0.23	0.41
Model 2	264.60	10	<.001	0.96	0.16	0.04	0.78
Model 3	203.32	4	<.001	0.97	0.23	0.04	0.58
Model 4	20.53	12	0.06	1.00	0.03	0.01	0.99

Note. Model 1 = hypothesized model; Model 2 = Model 1 + personality effects on media experiences; Model 3 = Model 2 + personality effects on mental health; Model 4 = final model; χ^2 = chi-square of model fit, df = degrees of freedom; p = p-value; CFI = comparative fit index; RMSEA = root mean square error of approximation; SRMR = standardized root mean square residual; NNFI = non-normed fit index.

Based on the theoretical assumptions of Model 3, we tried to explore a model that fits the data better. We tried to identify a model in a way that we considered theoretically viable paths (Annesi & Marti, 2011). To further improve the data fit, we used modifications indices and removed non-significant paths in order to get a more parsimonious model. The resulting final model, Model 4, had a good overall fit ($\chi^2(12) = 20.53$, p = 0.06; RMSEA = 0.03, 90% CI [0.00, 0.05]; CFI = 1.00). All path coefficients (B) are statistically significant (p < 0.05), and there are no anomalies and no modification indices (see Fig. 2).

In Model 4 and in partial correspondence with our hypothetical model 3, we found that social media use is positively related to being a victim of ghosting (B = 0.15), fear of missing out (B = 0.11), and vaguebooking (B = 0.09), while being negatively related to mental health (B = −0.13). In addition, we found that high fear of missing out was associated with increased levels of being a victim of ghosting (B = 0.18) and vaguebooking (B = 0.14), whereas both were negatively related to mental health (B = −0.29, B = −0.12). Higher levels of being a victim of ghosting also corresponded with more experiences of vaguebooking (B = 0.31). We also found that younger participants used social media more intensively (B = −0.20), and social comparison was more important to them (B = 0.19).

Concerning the relationships with personal characteristics, we found that women had fewer experiences of vaguebooking than men (B = −0.05) and experienced less fear of missing out (B = −0.08). Furthermore, women were ghosted less (B = −0.11). Here, we also found that increasing age corresponded with increased mental health (B = 0.07). For personality traits, it was found that higher levels of the need to belong were associated with higher levels of fear of missing out (B = 0.20) but lower levels of being a victim of ghosting (B = −0.11) and vaguebooking (B = −0.07). Social comparison was also related positively to fear of missing out (B = 0.43), vaguebooking (B = 0.15), and being a victim of ghosting (B = 0.14). Additionally, it was related negatively to mental health (B = −0.23). Higher social identity corresponded with more experiences of being a victim of ghosting (B = 0.18) and higher fear of missing out (B = 0.11), but also better mental health (B = 0.17). Finally, having a histrionic personality was positively related to vaguebooking (B = 0.32), being a victim of ghosting (B = 0.21), and fear of missing out (B = 0.16). The variables in the model explained 58 percent of the variance in fear of missing out, 33 percent in being a victim of ghosting, 55 percent in vaguebooking, and 29 percent in mental health. If one converts these R^2 into Cohen's f^2, then consistently large effect sizes appear (Cohen, 1992).

4. Discussion

The goal of the present study was to explore the role of personality as well as social media use and experiences in relation to mental health. The study extends findings in the literature by integrating and relating three different social media experiences: fear of missing out, being a victim of ghosting, and vaguebooking. In particular, the study adds to the literature by investigating the mediating role of social media use and experiences with the effects of personal characteristics and personality traits on mental health.

We tested three different models and identified within a theory-based exploratory search a good data fit for one additional model, our best and final model 4. Our best model essentially confirms our hypothetical model 3 with the exception that in model 4 a direct relationship

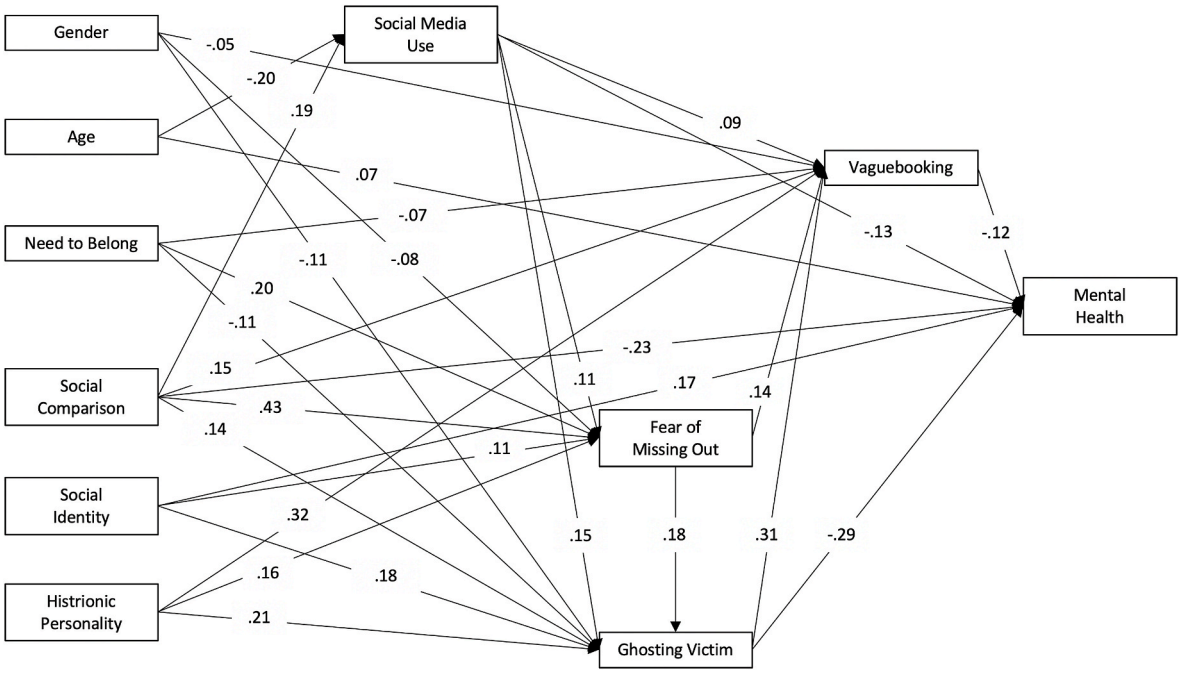

Fig. 2. Path Diagram for Final Model. *Note*. The figure shows standardized path coefficients from the LISREL analysis. All lines represent significant paths, $p < 0.05$.

between social media use and mental health was also found. In addition, the final model does not show entire blocks of variables as being related to others (as in model 3), but only certain individual variables within these blocks. In general, and from a theoretical perspective, this means that social media use has only a reduced filtering function when it comes to the relationship between personality factors and mental health. In particular, we could confirm that increased social media use was associated with increased levels of fear of missing out, being a victim of ghosting, and vaguebooking as well as mental health problems. Our results concur with other findings on significant relationships between social media, smartphone use, and fear of missing out as social media fulfills individuals' social needs, such as being connected to others and feeling a sense of belonging (Wolniewicz et al., 2018). Having frequent, easy, and only virtual online-access to other people could increase uncertainty about the quality of those relationships. Greater uncertainty, in turn, could lead to greater fear of missing out. Our results also correspond with findings on the increase in being a victim of ghosting through social media as social media allows easy connection with others that is, on the one hand, anonymous and, on the other, facilitates surveillance and control (Thomas & Dubar, 2021). Being anonymous and having control might contribute to increasing the possibility of withdrawing from social relationships. Our findings also confirm results that people who use social media more reported more experiences of vaguebooking (Berryman et al., 2019) because vaguebooking might be applied as a strategy for personal marketing and privacy management (Child & Starcher, 2016). People might post about themselves deliberately mysteriously to arouse interest while not revealing too much information. Our finding that social media use is related negatively to mental health is in line with similar findings on a negative association between social media use and mental health (e.g., Valkenburg et al., 2022). Social media might act as a catalyst by reinforcing negative personality traits or by reducing time and effort for positive personality development. However, the research is not clear on this point: there are also positive and neutral effects of social media on mental health, especially, for example, when there is routine use with little emotional connection (e.g., Bekalu et al., 2019).

Moreover, we discovered negative relationships between being a victim of ghosting as well as performing vaguebooking and mental health. Our findings about being a victim of ghosting are in line with findings from Timmermans et al. (2020) that being a victim of ghosting is related to negative mental health-related feelings, like sadness, hurt, anger, disappointment, and disillusion. In respect to vaguebooking, there is scant research to be found; however, there might be a consensus that vaguebooking represents at least a warning sign for experiencing difficulties in personal development and related mental health problems, which need to be investigated by future research in more detail (Berryman et al., 2018). Our identified relationships between fear of missing out and being a victim of ghosting and vaguebooking as well as being a victim of ghosting and vaguebooking might be explained with the application of reinforced navigation strategies for reducing uncertainty (LeFebvre & Fan, 2020). People who have fear of missing out or who experience being a victim of ghosting might feel increased pressure to redefine or regain their social status with others. However, increasing pressure on others might also increase negative social experiences as people do not like to be put under pressure.

In respect to personal characteristics and personality traits, the fact that women experience less fear of missing out and being a victim of ghosting, which we identified in our study, might be due to more offensive social media behaviors on the part of men. Men apologize less frequently than women, and they rate offenses as less severe, which might increase negative social media experiences (Schumann & Ross, 2010). Our findings that being older decreases social media use and increases mental health is in line with research from Auxier and Anderson (2021) as well as Westerhof and Keyes (2010). People of a certain developmentally sensitive age have important personal tasks to accomplish, which, on the one hand, reduces their time spent on social media and, on the other hand, creates developmental dynamics that might positively impact self-esteem and related mental health (e.g., Robins & Trzesniewski, 2005). As in our data, a positive relationship between the need to belong and fear of missing out was found by Beyens et al. (2016). People with a strong need to belong to others might also be more afraid of losing their connection to others. Our identified negative relationships between the need to belong to vaguebooking and being a victim of ghosting might be explained by the fact that people who have a strong need to belong to others might behave in a more socially acceptable manner, meaning they have higher social adjustment that reduces negative experiences (e.g., Yang & Robinson, 2018). Our findings that higher levels of social comparison orientation correspond with

higher levels of social media use, fear of missing out, being a victim of ghosting, and vaguebooking as well as lower levels of mental health are in line with findings that social comparison orientation increases social media use and, in general, negative affective balance (e.g., Vogel et al., 2015). We found a positive relationship between social identity and mental health that echoes findings that social identity increases mental health by facilitating positive interpretations of stressful experiences (e.g., Cruwys et al., 2015). Furthermore, our findings indicated that social identity is related to fear of missing out, supporting findings that people who prioritize and highly value being a social being might make more effort to stay in social networks, and they also might be more concerned about missing social opportunities (Duman & Ozkara, 2021). Something similar may apply to the relationship between social identity and being a victim of ghosting; however, there are currently no comparable research results on this topic. Finally, we found that a histrionic personality (where self-esteem depends on other people's evaluation) was related to fear of missing out, being a victim of ghosting, and vaguebooking, which is consistent with findings that having such a personality increases the desire to be liked and the need for social approval in a way that others might find offensive and demanding, thus potentially increasing negative social media experiences (Savci et al., 2021).

4.1. Strengths, limitations, and future perspectives

The current study has a number of strengths. To the best of our knowledge, it is the first study to examine the triad of fear of missing out, being a victim of ghosting, and vaguebooking and their relationships with mental health in the contexts of personal characteristics, personality traits, and social media. It therefore addresses a gap in the literature regarding being a victim of ghosting and vaguebooking as important social media experiences. Even if there is no representative sample, our study's sample comprised participants from around the world, meaning the study has an international perspective. We developed and validated new measurement scales on the social media experiences of being a victim of ghosting and vaguebooking, which can stimulate future research.

While promising, our study has several limitations. First, the sample had large proportions of women and university graduates. About 70 percent of our participants came from Europe. Our results might be different if we included more Asian countries, for example, as their social media related problems might be different compared to those of European participants (e.g., Kuss et al., 2021). In addition, many participants could have been affected by a COVID-19 wave that was present in many countries during the data collection phase of this study (e.g., Haddad et al., 2021). Furthermore, we used convenience sampling through social media channels; thus, the results are not generalizable to other populations. Future studies should achieve a more balanced sample in terms of gender and educational level and replicate our findings.

Second, we used self-reporting measures (with acceptable reliability and validity) instead of unobtrusive measurements, like performance-based tests or diagnostic interviews, which would be appropriate or more valid when measuring affective problems or mental health. Regarding this point, from research, we know that adolescents overestimate their time spent on social media or that self-reports about their mental health might only have moderate validity (Ridge et al., 2009; Verbeij et al., 2021). Future studies should rely on observation instruments, clinical face-to-face interviews, or multi-informant approaches to validate our findings. In addition, and despite good indications of reliability and validity, the ghosting and vaguebooking instruments in particular could be subjected to further validity tests (e.g., via confirmatory factor analysis to examine construct validity).

Third, we conducted a cross-sectional study with no longitudinal perspective and no possibility to distinguish cause from effect conclusively. Our evidence is based on correlations that do not allow causal claims. We had a heterogeneous sample with validity threats for identifying our parameters (due to observed and unobserved sources of heterogeneity). We tested multiple models with different variables, which represents an attempt to address at least observed heterogeneity (Becker et al., 2013). Also, the statistical power of our models was varying. We used the semPower-Software as post-hoc analysis and found power levels ranging from 0.54 to 1 (average: 0.89) for our four models (Jobst et al., 2021; Moshagen & Erdfelder, 2016). We learned (based on: RMSEA = 0.03, beta = 0.20, p = 0.05, df = 12) that for a perfect power (of 0.80) of our final model, we would have needed a larger sample size of about 1600 participants. We also had a limited focus concerning personal characteristics and personality traits. For example, extraversion, neuroticism, or social anxiety were not part of our focus, although they have been found to be relevant to social media experiences and mental health (e.g., Hu et al., 2017). In addition, for expanding theoretical perspectives, social media experiences must be linked more conclusively to existing models of mental health or mental health recovery (e.g., Ellison et al., 2018).

Nevertheless, our results replicate many prior research findings and extend other findings, mainly by accounting for experiences of being a victim of ghosting and vaguebooking. We tried to integrate these two variables to better understand their mediating role as a triad together with fear of missing out between personality characteristics, social media use, and mental health. We focused on direct effects and did not consider testing direct and indirect effects, moderations or moderated mediations, reciprocal processes, or more complex latent models because the current state of research—especially on the triad of fear of missing out, being a victim of ghosting, and vaguebooking—does not deliver sufficient evidence (e.g., Wang et al., 2018). Future research activities need to explore more elaborated views on this triad to rule out alternative explanations (e.g., Aneshensel, 2013). Further studies should also expand our findings by searching for other variables that might help to reduce or protect against their negative effects on mental health. Such variables could, for example, be ego development (e.g., Gilmore & Durkin, 2001), resilience (e.g., Oshio et al., 2003), or meaning in life (e.g., Schnell, 2009).

4.2. Implications for practice

Our findings about the role of personality, social media experiences, and mental health have implications for educational and psychological practice. In general, based on our findings, it seems appropriate to consider adolescents' social facets of personality and social media experiences in diagnosing and intervening activities on social media-related mental health issues. According to our findings, social personality traits, like the need to belong, social comparison orientation, social identity, and histrionic personality, are all directly or indirectly related to mental health and should therefore be considered in diagnostic assessments. In addition, the amount of social media use, and the frequency of fear of missing out, being a victim of ghosting as well as vaguebooking experiences should be focused on in screening or assessment but also in intervention activities, such as media addiction interventions or training on social media skills.

In doing so, attention should be paid to already validated procedures of screening and intervening social media-related mental health problems. From a screening and assessment perspective and as a first step, practical screening tools could be used to support an initial clarification, such as social media or smartphone addiction scales as well as internet gaming disorder scales (e.g., Leung et al., 2020). In a second step, other tools could then be applied to enable a more specific analysis such as intensity scales (about the strength of emotional attachment to social media) or mindset scales (about positive or negative beliefs about social media) (e.g., Mieczkowski et al., 2020). From an intervention perspective, measures could involve therapies, but if appropriate, also trainings, coachings, or self-help programs on social media and related mental health problems (e.g., Hou et al., 2019; Van Rooij et al., 2012). Such measures could refer to approaches that cover multiple personal and

social facets of social media use like empathy trainings or social participation interventions (e.g., Schultze-Krumbholz et al., 2016; Webber & Fendt-Newlin, 2017).

5. Conclusion

The current findings showed that social personality traits in combination with social media experiences are significantly related to mental health. Future research could especially benefit from unobtrusive measurements as well as longitudinal studies in which the validity and causality of effects can be clarified. An additional perspective would be to focus on variables that protect against negative social media experiences on mental health, like ego development, resilience, and meaning in life.

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Declaration of interest

None.

Informed consent

All procedures in this study were conducted in accordance with the ethical standards of the institutional research guidelines, and informed consent was obtained from all participants.

Form: I have read the information on this survey and I agree to the terms and conditions. My participation is voluntarily, and I can stop and leave the survey at any time without negative consequences for myself. I agree to the data being processed further. O Yes O No.

Authors' contributions

All three authors contributed to all parts of the manuscript. The first author supervised the study and wrote the manuscript, while the second and third authors designed and carried out the study as well as revised the manuscript.

Data availability

Data will be made available on request.

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