Article

Social Media Addiction and Fear of War in Germany

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Abstract: Individuals with an excessive use of social media may be frequently exposed to stimuli, such as (fake) news or images of violence, which might lead to a higher fear of war. Therefore, the objective of this study is to examine the association between a social media addiction and fear of war (conventional war and nuclear war) in Germany. Data were taken from a nationally representative survey with n = 3091 participants (18 to 74 years; data collection in mid-March 2022). Social media addiction was quantified using the validated Bergen Social Media Addiction Scale. Moreover, established items were used to quantify a fear of war. Medium differences (in terms of Cohen's d) were identified regarding the fear of war between individuals without a social media addiction and individuals with a social media addiction. Adjusting for several covariates, the regressions revealed that individuals with a social media addiction had a higher fear of war compared to individuals without a social media addiction (fear of a conventional war: β = 0.44, $p < 0.01$; fear of a nuclear war: β = 0.61, $p < 0.001$). In conclusion, our study demonstrated an association between a social media addiction and fear of war.

Keywords: fear of war; nuclear war; war; social media; social network; social web; mass media; addiction

1. Introduction

With the present military conflict and humanitarian crisis taking place in Eastern Europe, new challenges occur. Particularly in nearby countries, we assume that the current actions may considerably raise the fear of war. Individuals living in Germany, which has a history of war, may particularly fear involvement in upcoming wars. Because a fear of war is linked to worse mental health [1–4], examining the correlates of the fear of war is of great importance. The prior research which mainly refers to the 1980s and 1990s [1,4,5], for example, identified sociodemographic determinants of higher levels of a fear of war, such as being female [5]. Only very few recent studies investigate the fear of war (e.g., [2,6–8]). For example, based on a snowball technique, one study [7] examined war fear among Ukrainian students and faculty/staff members (four Universities, data collection: May 2022). However, thus far, there is a complete lack of studies focusing on the association between social media use or addiction (e.g., excessive use of Twitter, Facebook or Instagram) and a fear of war. Therefore, the aim of this study was to identify the association between social media addiction and fear of war in the general adult population in Germany. Such knowledge is important to identify individuals at risk for high levels of fear, such as individuals with a social media addiction.

Social media addiction can be seen in the light of the motivation theory [9]. Intrinsic factors, such as enjoyment [9], or extrinsic factors (such as social motivation [10]) can contribute to social media use. Moreover, the attachment theory (proposing that humans have a need to belong to someone or the need to be connected to someone [11]) can serve as a theoretical model to understand social media addiction. Following this theory, social media users can receive emotional support from other users. Moreover, the social media platform environment can support individuals' goal achievements [12].

Additionally, according to the uses and gratifications model [13] proposed by Rubin, factors exist that explain individual differences in how media are selected to fulfill individual needs. Based on the different patterns of social media use, different consequences can follow. This model can serve as a theoretical foundation to better understand the consequences of social media addiction. For example, based on this model, a recent study has shown that personal understanding dependency ("the reliance on social media to learn about how to interact with others and how that might impact the self", page 5 [14]) can result in emotional consequences, whereas entertainment ("the reliance on social media to relieve boredom or to have fun", page 5 [14]) and social information dependency ("reliance on social media to fulfill the need for learning about the community, country, and world", page 5 [14]) were not associated with emotional consequences [14].

With regard to possible mechanisms, such excessive use of social media can also be partly explained by the fear of missing out [15]. Moreover, individuals with excessive use of social media may be frequently exposed to, among other things, (fake) news and to images or videos of violence (or even war) [16]. This excessive confrontation with these visual stimuli may lead to a higher fear of war. Virtual communications (e.g., in forums) that build up could also promote a fear of war. Thus, our two hypotheses are as follows:

(1)   Social media addiction is positively associated with fear of a conventional war.
(2)   Social media addiction is positively associated with fear of a nuclear war.

2. Materials and Methods

2.1. Sample

Data were taken from a nationally representative online survey of individuals (18 to 74 years) in Germany. More explicitly, our study had two inclusion criteria: individuals aged 18 to 74 years and living in Germany. In contrast, exclusion criteria were only: aged 17 years or younger or 75 years and above, not living in Germany. Further exclusion criteria were not present.

In sum, n equaled 3091 individuals. The survey was conducted from 15 March to 21 March 2022. The participants were recruited by the well-known market research firm Bilendi & respondi (ISO 26362 certified online sample provider). Respondents were drawn from an online sample based on quota to match the distribution of the general adult German population in terms of age group, federal state and gender [17].

Informed consent was given by all participants. The Center for Psychosocial Medicine's Local Psychological Ethics Committee at the University Medical Center Hamburg-Eppendorf approved this study (LPEK-0412).

2.2. Outcomes

Fear of conventional war and fear of nuclear war were measured according to previous research [5]. Individuals reported a level of fear for (1) fear of war and for (2) fear of nuclear war, each ranging from 0 (which corresponds to: not at all worried) to 4 (which corresponds to: extremely worried). It should be noted that only the endpoints were labeled. The two items were about "my country getting involved in a war" and "the outbreak of a nuclear war". Both outcomes are interpreted as continuous variables for reasons of simplicity. Previous research [5] found that these two variables are somewhat correlated (r = 0.28), indicating that they reflect different themes.

2.3. Key Independent Variable

Social media addiction was quantified using the German version [18] of the Bergen Social Media Addiction Scale (BSMAS) [19]. The BSMAS consists of six items (each ranging from 1 = very rarely to 5 = very often). It was developed covering the six key characteristics of addiction [20], namely salience, mood modification, tolerance, withdrawal, conflict and relapse. First, a sum score was created ranging from 6 to 30 (higher values reflect higher problematic social networking sites use severity). Prior research has proposed a score of 19 as cut-off for social media addiction [21]. However, based on gold standard of clinical

diagnosis, a recent study proposed a clinical cut-off of 24 for social media addiction [22]. Consequently, we used a cut-off of 24 for social media addiction. In a robustness check, we used a cut-off of 19 for social media addiction. Cronbach's alpha was 0.90 in this study. McDonald's omega [23] was also 0.90 in our study [24].

2.4. Covariates

Taking into consideration former research in this area [1,4,5] and additionally based on theoretical considerations, we controlled for various sociodemographic and health-related covariates in regression analysis (please see for further details: [6]): With regard to sociodemographic covariates, it was adjusted for age, sex (men; women; diverse), marital status (married, living with spouse; married, not living with spouse; widowed; single; divorced), having a migration background (no; yes), children in the same household (no; yes), highest school education (the following categories: without school-leaving qualification; currently in school training/education; Lower Secondary School; intermediate Secondary School; polytechnic Secondary School; qualification for applied upper secondary school; upper secondary school) and labor force participation (other; retired; full-time employed). Furthermore, in regression analysis, health-related covariates were included as follows: chronic illnesses (lack of chronic illnesses; one or more chronic illness) and self-rated health (single item; ranging from 1 (very bad) to 5 (very good).

2.5. Statistical Analysis

In a first step, sample characteristics are shown. Moreover, a principal component analysis (PCA) was conducted for the social media addiction tool. Subsequently, multiple linear regressions were performed (first outcome: fear of a conventional war; second outcome: fear of a nuclear war). Our key independent variable is social media addiction. The significance level was determined at $p < 0.05$. To perform statistical analyses, we used Stata 16.1 (Stata Corp., College Station, TX, USA).

3. Results

3.1. Key Sample Characteristics and Prevalence Rates

The mean age was 46.5 years (SD: 15.3 years; 18 to 74 years) in our sample. Moreover, 50.3% were male. The average fear of a conventional war was 2.5 (SD: 1.1) and the average fear of a nuclear war was 2.4 (SD: 1.2). In total, 2.0% of the individuals had a social media addiction (with a cut-off of 24 for the BSMAS; when a cut-off of 19 was used for the BSMAS: 7.0%). The average score of the BSMAS was 10.0 (SD: 5.0), ranging from 6 to 30. In Table 1, more details are given.

Table 1. Sample characteristics (n = 3091).

Variables	N (%)/Mean (SD)
Fear of a conventional war (0 (not at all worried) to 4 (extremely worried))	2.5 (1.1)
Fear of a nuclear war (0 (not at all worried) to 4 (extremely worried))	2.4 (1.2)
Social media addiction (Bergen Social Media Addiction Scale: from 6 to 30, with higher values reflect higher problematic social networking sites use severity)	10.0 (5.0)
Social media addiction (Bergen Social Media Addiction Scale ≥ 19)	
Absence of social media addiction	2874 (93.0%)
Presence of social media addiction	217 (7.0%)
Social media addiction (Bergen Social Media Addiction Scale ≥ 24)	
Absence of social media addiction	3028 (98.0%)
Presence of social media addiction	63 (2.0%)

Table 1. *Cont.*

Variables	N (%)/Mean (SD)
Gender	
Male	1554 (50.3%)
Female	1531 (49.5%)
Diverse	6 (0.2%)
Age	46.5 (15.3)
Children in own household	
No	2158 (69.8%)
Yes	933 (30.2%)
Marital status	
Single/Divorced/Widowed/Married, not living together with spouse	1266 (41.0%)
Married, living together with spouse	1825 (59.0%)
Highest school education	
Upper secondary school	1234 (39.9%)
Qualification for applied upper secondary school	356 (11.5%)
Polytechnic Secondary School	196 (6.3%)
Intermediate Secondary School	956 (30.9%)
Lower Secondary School	327 (10.6%)
Currently in school training/education	16 (0.5%)
Without school-leaving qualification	6 (0.2%)
Migration background	
No	2721 (88.0%)
Yes	370 (12.0%)
Employment status	
Full-time employed	1365 (44.2%)
Retired	646 (20.9%)
Other	1080 (34.9%)
Chronic diseases	
Absence of at least one chronic disease	1673 (54.1%)
Presence of at least one chronic disease	1418 (45.9%)
Self-rated health (from 1 = very bad to 5 = very good)	3.6 (0.9)

Stratified by social media addiction, the individuals with a social media addiction (BSMAS $\geq$ 24) had an average fear of a conventional war of 2.9 (SD: 1.1), whereas the individuals without a social media addiction (BSMAS < 24) had an average fear of a conventional war of 2.5 (SD: 1.1). This is a small-to-medium difference (Cohen's d = 0.39). Additionally, the individuals with a social media addiction had an average fear of a nuclear war of 3.0 (SD: 1.1), whereas the individuals without a social media addiction had an average fear of a conventional war of 2.3 (SD: 1.2). This is a medium difference (Cohen's d = 0.53). Moreover, the results of the PCA for the social media addiction scale are shown in the Supplementary File.

3.2. Regression Analysis

The findings of the multiple linear regressions are displayed in Table 2 (second column: social media addiction was defined as BSMAS $\geq$ 24 and with fear of a conventional war as outcome; third column: social media addiction was defined as BSMAS $\geq$ 24 and with fear of a nuclear war as outcome measure; fourth column: social media addiction was defined as BSMAS $\geq$ 19 and with fear of a conventional war as outcome; and fifth column: social media addiction was defined as BSMAS $\geq$ 19 and with fear of a nuclear war as outcome measure). The R^2 values ranged from 0.06 to 0.08. With regard to the model assumptions (the model presented in the second column in Table 2): the mean variance inflation factor (VIF) was 1.25 (highest VIF was 1.91), indicating that we do not have a problem with multicollinearity. The Breusch–Pagan test was used to examine the heteroskedasticity. According to the results (Chi^2 = 16.58, $p < 0.001$), we rejected the null hypothesis (constant variance). Consequently, heteroskedasticity in the residuals is present. Therefore, the standard errors were corrected (i.e., robust standard errors). A standardized normal probability plot was conducted to examine the normality of the residuals. Following this, an approximate normal distribution of the residuals can be assumed.

Table 2. Social media addiction and fear of war. Results of multiple linear regressions.

Independent Variables	Fear of a Conventional War	Fear of a Nuclear War	Fear of a Conventional War	Fear of a Nuclear War
Social media addiction (BSMAS $\geq$ 24)	0.44 ** (0.15)	0.61 *** (0.14)		
Social media addiction (BSMAS $\geq$ 19)			0.34 *** (0.08)	0.49 *** (0.08)
Potential confounders	✓	✓	✓	✓
R^2	0.06	0.08	0.06	0.08
Observations	3091	3091	3091	3091

Odds Ratios are reported; 95% CI in parentheses; *** $p < 0.001$, ** $p < 0.01$, * $p < 0.05$, + $p < 0.10$; Potential confounders include sex, age, family status, having children in own household, having a migration background, highest educational level, employment situation, chronic illnesses and self-rated health.

The multiple linear regressions showed that the individuals with a social media addiction (BSMAS $\geq$ 24) reported a higher fear of war compared to the individuals without a social media addiction (fear of a conventional war: β = 0.44, $p < 0.01$; fear of a nuclear war: β = 0.61, $p < 0.001$). Moreover, the regressions showed that the individuals with a social media addiction (BSMAS $\geq$ 19) reported a higher fear of war (fear of a conventional war: β = 0.34, $p < 0.001$; fear of a nuclear war: β = 0.49, $p < 0.001$), after adjusting for the covariates.

In an additional analysis, we also conducted some ordered logistic regressions. Again, the associations between a social media addiction (both: definitions) and higher fear of a conventional as well as fear of a nuclear war remained statistically significant (social media addiction (BSMAS $\geq$ 24) and fear of a conventional war: OR: 2.25, $p < 0.01$; social media addiction (BSMAS $\geq$ 24) and fear of a nuclear war: OR: 2.66, $p < 0.001$; social media addiction (BSMAS $\geq$ 19) and fear of a conventional war: OR: 1.79, $p < 0.001$; social media addiction (BSMAS $\geq$ 19) and fear of a nuclear war: OR: 2.25, $p < 0.001$)).

4. Discussion

The aim of this study was to investigate the link between social media addiction and fear of war (both conventional war and nuclear war). Mostly medium differences (in terms of Cohen's d) were identified regarding the fear of war between individuals without a social media addiction and individuals with a social media addiction. The regressions showed that the individuals with a social media addiction reported a higher fear of war. Our findings thus confirmed our initial hypothesis. As the first overall study, our current study examined such an association and showed that social media addiction is associated with a higher fear of war among the general adult population in Germany.

Due to the lack of literature, it is rather challenging to compare our current results with prior research. However, overall, our findings appear plausible to us. Previous research has already demonstrated that such an excessive use of social media (which is associated with social media addiction [25]) is associated with frequent exposure to images or videos of violence [16]. Excessive exposure to these visual stimuli may increase one's fear of war. Furthermore, we assume that a growing number of virtual contacts (e.g., in forums) may also increase fear of war. There, discussions could get out of hand (e.g., spreading gossip, cyber-bullying or harmful misinformation) without moderation [26]. Additionally, the prior research has clearly shown that social media addiction is linked to loneliness and lower mental health [27]. In turn, such factors are associated with a fear of war [2,4].

The former research has also shown that social media use is associated with more beliefs in certain types of conspiracy theories as well as misinformation [28]. We assume that beliefs in conspiracy theories and misinformation may be associated with a higher fear of war.

Some strengths and limitations should be noted. The data came from a very recent, large representative sample of Germany's general adult population. Upcoming research, however, is needed regarding the fear of war among age groups not included in our survey (e.g., individuals aged 75 years and over). An established screening tool for social media addiction was used. Moreover, fear of war was quantified in accordance with the prior research. However, some days ago, a new instrument was developed to quantify the fear of war [2] which could be used in upcoming research. It should be noted that only a small proportion of individuals were classified as addicted to social media, which can have consequences for the precision of the estimates. Additionally, longitudinal studies are required to validate our present results. The directionality should be clarified. It also appears plausible that a fear of war contributes to a social media addiction. For example, individuals predisposed for fear could seek more information and consequently may develop an addiction to social media.

In conclusion, this study showed a link between social media addiction and fear of war. Such information might help characterizing people who are more likely to experience a fear of war. Efforts to avoid social media addiction may be beneficial. We hope that our study is a first step toward a better understanding of the link between social media addiction and fear of war. Future studies are required to clarify the underlying mechanisms. Upcoming studies in other countries are required to examine the link between social media addiction and fear of war. Moreover, potential moderating factors could be examined in future studies.

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