Social Media Addiction Moderates Links between Perceptions of Freedom and Mental Health in the United States and Germany

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Abstract

People who perceive themselves as free report better mental health. Perceptions of freedom are derived from the social environment, which has drastically changed due to social media. Social media addiction, for example, has been linked to worse mental health and escaping from the offline world. What is unknown is whether perceptions of freedom and social media addiction have an interactive effect on mental health. We tested whether social media addiction moderated the link between perceptions of freedom and mental health in a cross-cultural study incorporating two large, population-representative samples of Americans ($n = 1007$) and Germans ($n = 1029$). Participants reported a) how free they felt relative to other people and b) how free they felt their country was relative to other countries. For both comparisons, participants reported four types of perceptions (explicit freedom, belongingness/social cohesion, fairness, and wealth), which we aggregated to reflect an overall index of freedom perceptions, as supported by confirmatory factor analyses. Findings suggested that people who perceived themselves and their country as freer reported better mental health. However, the relationship between self-perceptions of freedom and mental health was weaker among those who reported greater social media addiction. Conversely, the relationship between perceptions of freedom regarding one's country and mental health was stronger among those who reported greater social media addiction. These findings suggest an interactive effect between freedom perceptions and social media addiction on mental health, but such effects depend on who and what those perceptions are about.

Keywords: social perception; freedom; self; social media; mental health

Public Significance Statement

People who perceive themselves as free report better mental health. Our findings suggest, however, that perceptions of freedom may not relate as positively to mental health among those addicted to social media. It is important to consider how perceptions of freedom and their psychosocial correlates are embedded in a digital world with social media platforms.

Social Media Addiction Moderates Links between Perceptions of Freedom and Mental

Health in the United States and Germany

Prior research found that people who perceive themselves as free, treated fairly, and wealthy relative to others are less depressed, anxious, and stressed and report greater levels of subjective well-being (Boyce et al., 2010; Callan et al., 2015; Scholten et al., 2017a; 2018). Perceptions of these factors were even stronger predictors of mental health than their objective properties: For example, Scholten et al. (2017a) found that whether people perceived themselves as wealthy or free relative to others in their environment were stronger predictors of mental health than actual indices of wealth or freedom in their environment (e.g., Economic Freedom of the World Index; Gwartnery et al., 2012; Index of Personal Freedom; Vásquez & Štumberger, 2012; Worldwide Index of Human Freedom; McMahon, 2012). Perceptions of freedom may involve perceived abilities to achieve one's goals ("freedom to") and act without external interference ("freedom from"; Berlin, 1969; Crocker, 1980; Fromm, 1941; MacCallum, 1967). People who perceive themselves as free to do what they want and as having the resources to do so (e.g., wealth) are more likely to be happier and experience fewer negative mental health symptoms than people without such perceptions of freedom.

Perceptions of freedom are derived from social environments (Swann & Jetten, 2017), but past research has focused on perceptions of freedom in the physical world. Digital technologies, particularly social media platforms, may have shaped perceptions of freedom (at least in geographical regions where people can access such platforms). Early Internet research suggested that social platforms offered new ways for people to express identities (Mckenna & Bargh, 2000), suggesting that digital technologies may be liberating. However, a recent review suggested that 21st-century digital technologies like social media constrain people (e.g., pressures

to present the self in more socially desirable ways, increased social hierarchy, and more homogeneity; Talaifar & Lowery, 2023). Adjacent lines of research show complicated links between digital technology use and mental health (Orben et al., 2024; Valkenburg, 2022) but certain usage patterns like using social media in an addictive way have been linked more consistently to worse mental health (Andreassen et al., 2017; Hou et al., 2019; Sun & Zhang, 2020).

Against this background, we examined whether the relationship between perceptions of freedom and mental health depends on a person's engagement with social media in terms of social media addiction. We conducted a cross-cultural study of two large, representative samples in the United States and Germany. To provide the background for our study, we first review the literature on freedom perceptions and mental health. Then, we propose a model of the role social media addiction may play in the link between freedom perceptions and mental health.

**Freedom Perceptions and Mental Health**

Philosophers (e.g., Kant, 1785/1983; Mill; 1859/1975) developed internal and external accounts of freedom determining whether a person can "be one's own person" (i.e., to act on one's resources, motives, values, etc.) and do so in the face of external pressures (Berlin, 1969; Crocker, 1980; Fromm, 1941; McCallum, 1967). Of interest to behavioral scientists are the psychological implications of these indicators of freedom. Whether people are metaphysically free or not, people *perceive* agency through the *self*. The self is the "me" at the center of a person's experience (Markus & Kitayama, 2010) and is defined by "the entire set of beliefs, evaluations, perceptions, and thoughts that people have about themselves" (Swann & Bosson, 2010, p. 591)—including perceptions of selecting, altering, defying, and exploring one's social environments (Markus & Kitayama, 2010; Swann & Jetten, 2017; Talaifar & Lowery, 2023).

Prior research has examined perceptions of freedom by comparing how people perceive themselves to others. People derive their sense of self from interactions with others and their social environments (Cooley, 1902; Markus & Kitayama, 2010; Mead, 1934), including social comparison (Festinger, 1954). Following the biopsychosocial perspective (Bronfenbrenner, 1979; Bronfenbrenner & Ceci, 1994; Engel, 1977; 1981; Vélez-Agosto et al., 2017), recent research identified four types of environment-derived perceptions indicative of internal and external freedom that predict mental health: 1) explicit perceptions of freedom (i.e., how free a person perceives themselves), and 2) how wealthy, 3) fairly treated, and 4) belonging they perceive themselves (Boyce et al., 2010; Callan et al., 2015; Reichl et al., 2013; Scholten et al., 2017a; 2018). Taken together, how people compare themselves to others on these four types of perceptions may address the philosophical accounts of freedom in the internal sense (e.g., perception of being able to act based on one's characteristics, values, reasons, etc.) and being able to act in face of external pressures (e.g., perception of having sufficient resources such as wealth, being treated fairly, and feeling like one belongs in their social environment).

We sought to build and extend on this literature. Explicit perceptions of freedom combined with perceptions of belongingness, being fairly treated, and being wealthy may broadly represent how perceptions of freedom inform mental health. However, whether these four types of perceptions are indicative of an underlying factor of overall freedom has not been empirically demonstrated. Moreover, past research has not considered how social media may influence the link between perceptions of freedom and mental health. To close these gaps, we sought to first examine whether the four types of perceptions loaded onto a single factor indicative of overall perceptions of freedom in confirmatory factor analyses. Then we sought to test a proposal that social media addiction moderates the links between perceptions of freedom

and mental health (see Figure 1) in terms of each perception type and overall freedom (averaging

the four types together in the event of confirmatory factor analysis support). Below, we provide a

theoretical basis for our model

Figure 1
Conceptual Model
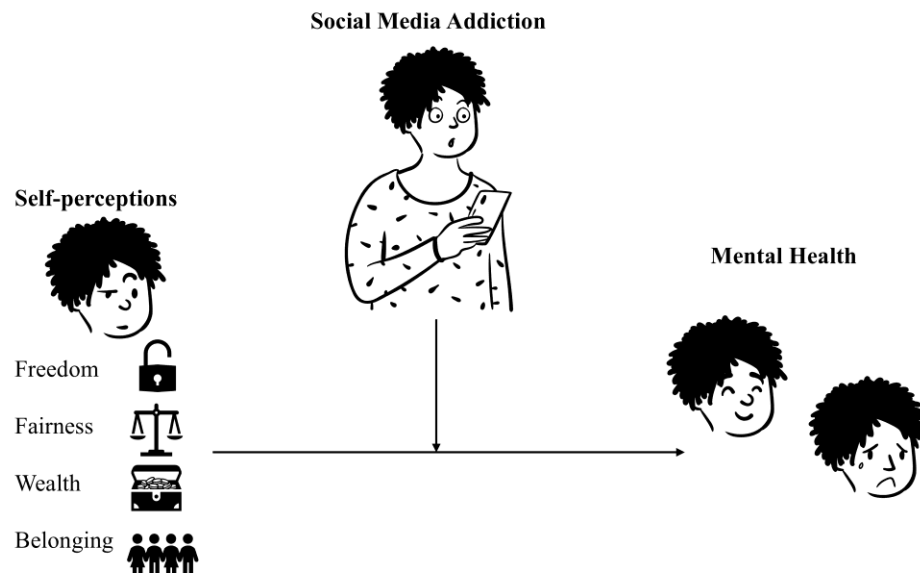
The Role of Social Media Addiction

Social media addiction concerns the use of social media in uncontrollable ways that take

over other aspects of life (Andreassen et al., 2012; 2017). Based on general addiction models

(e.g., Griffiths, 2005), social media addiction concerns being preoccupied with social media

(salience), using social media to reduce negative feelings (mood modification), increasing use to

achieve the same experiences (tolerance/craving), experiencing negative symptoms from lack of

use (withdrawal), and eschewing offline life for social media use (conflict/functional

impairment). Prior research suggests that those addicted to social media may be more likely to

use it as an escape (Brailovskaia et al., 2020) or to express their personality in ways they cannot

offline (Bunker & Kwan, 2021). Social media addiction is related to worse mental health (Andreassen et al., 2017; Hou et al., 2019).

How might the link between perceptions of freedom and mental health depend on social media addiction? On the one hand, addiction to social media may attenuate the link between freedom perceptions and mental health. Bombarded with notifications, likes, and other distractions in the digital world, social media may detract from coping with stressors in the offline world. Social media algorithmic features that restrict self-expression (Talaifar & Lowery, 2023) or disrupt offline relationships (Sbarra et al., 2019) may interfere with the benefits perceptions of freedom have on mental health. Alternatively, social media may strengthen the relationship between perceptions of freedom and mental health. Social media platforms grant many advantages to self-presentation not available in the offline world (e.g., profiles in which users can create to explore different identities; McFarland & Ployhart, 2015), which may help users to experience positive benefits of internal and external senses of freedom. Perhaps those who are addicted to social media use platforms to experience freedom they lack offline. We sought to test these competing possibilities in the present research.

The Present Study

We tested our proposed model in a cross-cultural study of two large, representative samples in the US and Germany. We chose these two cultures for the following reasons. First, the US and Germany are high on individualism (the US has a 91 and Germany has a 67 on Hofstede's 100-point individualism index; Hofstede Insights, 2023). Perceptions of freedom are likely important for mental health in cultures that emphasize social independence from others (i.e., perceiving oneself as autonomous; Triandis, 1995). Second, we wanted to consider cultures that vary in individualism but are not diametrically opposites. Cultures with very low levels of

individualism are more likely to have strict norms (Gelfand et al., 2011; Triandis, 1995), leading

people within cultures low on individualism to be less likely to respond to measures about

freedom perceptions in ways they actually feel. Third, we wanted to sample from cultures with

similar social media platforms to minimize potential confounds. People in Germany and the US

tend to use similar popular social media platforms like Facebook, Instagram, and TikTok—

although Germans tend to report comparatively lighter social media use (Gramlich, 2024).

        For further context, people in the US and Germany report comparably high rates of

freedom perceptions (70s and 80s on 100-point scales) relative to other countries in which these

perceptions have been examined (estimates range from 40s to 80s; Scholten et al., 2017a).

People in the US and Germany report moderate rates of mental health symptoms (e.g., 21.3%

reported experiencing anxiety or depression at least once throughout their life in the US and

19.3% in Germany) relative to the rest of the world (estimates range from 2.9 – 49.3%; Dattani et

al., 2023). The US and Germany are in regions that vary in social media addiction prevalence

(8% in Western Europe versus 15% in North America) but are moderate in comparison to global

estimates (24%; Cheng et al., 2021). The US and Germany are starting points to examine the

relationships between perceptions of freedom, social media addiction, and mental health, which

future research may build from.

        We also explored whether the effects in our proposed model may vary when people think

about how free their country is instead of the self. People's self-construal goes beyond their

physical body, personality characteristics, and other aspects of the individual self-concept—they

have a sense of their collective self (Brewer & Gardner, 1996), which may include perceived

attachment to their country relative to other countries (Cichocka & Cislak, 2020; Gronfeldt et al.,

2023; Kosterman & Feshbach, 1989).

We followed guidelines for Journal Article Reporting Standards for quantitative research in psychology (Appelbaum et al., 2018) and Transparency and Openness Promotion (Nosek et al., 2015). To that end, all data, analysis code, and study materials are available at: https://osf.io/4sxjp/?view_only=c6b2b6a2b1e24c0c8b5d6b826206fe39. This study was part of a larger preregistered project on perceptions of government communication, control and predictability of life, and subjective well-being across different cultures after COVID-19 lockdown periods (https://aspredicted.org/blind.php?x=TIN_YLJ).[1] The findings presented here are original and have not been published previously. No hypotheses for this paper were preregistered. All analyses were conducted in R, version 4.2.0 (R Core Team, 2023). The study was approved by The Ethical Committee of the Faculty of Psychology at the Ruhr-Universität Bochum.

Method

Participants and Procedure

Participants were recruited via YouGov, an independent social marketing and research institute, in the fall of 2022. We used YouGov to collect representative samples from residential populations in the US ($n = 1007$) and Germany ($n = 1029$) stratified by age, gender, and region. The demographic breakdown of the US sample was 52.9% women; 47.1% men; 10.0% 18-24 years, 17.1% 25-34 years, 15.6% 35-44 years, 17.1% 45-54 years, 40.2% 55 years or older; 13.4% lower class, 22.9% working class, 17.6% lower middle class, 33.5% middle class, 10.8% upper middle class, and 1.8% upper class. The demographic breakdown of the German sample was 51.8% women; 48.2% men; 5.3% 18-24 years, 13.6% 25-34 years, 15.3% 35-44 years, 21.6% 45-54 years, 44.2% 55 years or older; 8.6% lower class, 19.7% working class, 27.2%

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[1] The larger project contained data from countries other than Germany and the United States. However, the variables included in this report were only collected from data in these two countries.

lower middle class, 34.5% middle class, 8.8% upper middle class, 1.1% upper class. Based on

our sample sizes and conventional power of .80 and alpha of .05, our data had enough sensitivity

to detect small effects (rs > .088).

Measures

Perceptions of Freedom

We assessed four types of perceptions with items based on previous studies (e.g.,

Scholten et al. 2017a; 2018), which were available in both English and German. Participants

reported perceptions of belongingness (i.e., the extent they felt like they belonged), explicit

freedom (i.e., the extent they felt free), fairness (i.e., the extent they felt they were treated fairly),

and wealth (i.e., the extent they felt wealthy). For each type, the participant compared themselves

to other people within their country (e.g., "When you compare yourself with other people in the

USA, how fairly treated do you feel?") on a 100-point scale where 0 equaled they didn't feel that

type applied at all, and 100 equaled they felt very high levels of that type. Furthermore,

participants also compared their country to other countries in terms of these four perceptions

(e.g., "When you compare the USA with other countries, how fair do you find the USA?") using

the same 100-point scale. We used the term "social cohesion" instead of "belongingness" for the

items regarding perceptions of belonging in terms of the country. Thus, there were 8 perceptions

scores total, 4 for each target (self and country).

Before computing aggregate perceived freedom scores across types, we conducted

confirmatory factor analyses to observe whether the four perception items loaded onto a single

latent factor for both targets. Table 1 shows the item loadings and model fits for the confirmatory

factor analyses. For both targets (self and country), all four items showed strong loadings (>.500)

and model fit according to standard cutoffs (CFI > .950; SRMR < .080; RMSEA < .060; Hu &

Bentler, 1999). There was one exception, the RMSEA when the target was country (.169), that

did not indicate an acceptable model fit. However, RMSEA values can be inflated relative to

traditional cutoffs when degrees of freedom are small (as is often the case for one-factor models;

Kenny et al., 2015; McNeish & Wolf, 2023). Taken together, these analyses support

conceptualizing the perceptions of belongingness, fairness, freedom, and wealth as indicative of

an underlying factor representing overall freedom. We computed aggregate scores for each

target, which showed acceptable reliability: The self (α = .82) and country (α = .79). A higher

score indicated that the participant perceived greater overall freedom.

Table 1

Item Loadings and Model Fit in Confirmatory Factor Analyses of Perceived Freedom

Target and Item	Standardized Loading	Fit	
Self		χ^2 (2)	5.72
Belongingness	.68	CFI	.999
Fairness	.87	SRMR	.009
Freedom	.79	RMSEA	.030
Wealth	.59	RMSEA 95% CI	[.000, .061]
Country		χ^2 (2)	118.16
Belongingness	.60	CFI	.955
Fairness	.85	SRMR	.041
Freedom	.77	RMSEA	.169
Wealth	.57	RMSEA 95% CI	[.144, .195]

Note. N = 2036. All item loadings significant at p < .001. CFI = Comparative fit index; RMSEA = Root mean square error of approximation; SRMR = Standardized Root Mean Square Residual.

Social Media Addiction

We assessed social media addiction with English and German versions of the Bergen

Social Networking Addiction Scale (Andreassen et al., 2012; 2017; Brailovskaia et al., 2022).

The Bergen Social Networking Addiction Scale contains six items (e.g., "How often during the

last year have you tried to cut down on the use of social media without success?") which

participants responded to on a 5-point Likert-type scale (1 = *very rarely* to 5 = *very often*). Scores

were averaged to indicate overall social media addiction (α = .90). A higher score indicated

greater addiction to social media.

Mental Health

We assessed negative and positive indicators of mental health. Negative mental health

was assessed with English and German versions of the Depression, Anxiety, and Stress Scale 21

(DASS-21; Lovibond & Lovibond et al., 1995; Nilges & Essau, 2015; Scholten et al., 2017b).

Participants responded to 21 items assessing depression (e.g., "I felt that life was meaningless"),

anxiety (e.g., "I felt scared without any good reason"), and stress (e.g., "I found it hard to wind

down") on a 4-point Likert-type scale (0 = *did not apply to me at all*; 3 = *applies to me very

much or most of the time*). Responses from each subscale (depression, anxiety, and stress) were

summed such that a higher score indicated more negative mental health symptoms. We then

calculated the average of each subscale score to indicate total negative mental health (α = .96).

We assessed positive mental health with English and German versions of the Positive Mental

Health Scale (Bieda et al., 2017; Lukat et al., 2016). The Positive Mental Health Scale features 9

items (e.g., "I enjoy my life"), which participants responded to on a 4-point Likert-type scale (0

= *do not agree*, 3 = *agree*). We calculated the sum of the responses to indicate total positive

mental health (α = .92). The negative and positive mental health indices were moderately

correlated (r = .48, p < .001), suggesting they capture related but conceptually distinct aspects of

mental health.

Results

Analytic Plan

We tested our model (Figure 1) by examining whether social media addiction moderated

the relationships between perceptions of freedom and mental health (see Table 2 for descriptive

statistics and Table 3 for correlations between all variables). We ran separate multiple regression

models for a) the five freedom perception indices (aggregate, belonging, free, fairness, and

wealth), b) each target (self and country), and c) each mental health type (negative and positive).

In all models, we controlled for the effects of age, gender, and socioeconomic status, which

could introduce confounding effects.

Table 2
Descriptives for Study Variables

Variable	Across samples $N = 2036$		United States $n = 1007$		Germany $n = 1029$		Country d [95% CI]
	M	SD	M	SD	M	SD	
Aggregate							
1. Self	56.83	20.70	58.14	20.81	55.54	20.52	**.13 [.04, .21]**
2. Country	57.56	19.77	59.41	19.64	55.75	19.74	**.19 [.10, .27]**
Belongingness							
3. Self	55.25	25.97	55.25	26.72	55.25	25.23	.00 [-.09, .09]
4. Country	46.30	23.21	48.20	24.38	44.44	21.85	**.16 [.08, .25]**
Fairness							
5. Self	59.47	25.71	64.21	25.02	54.84	25.54	**.37 [.28, .46]**
6. Country	53.41	26.35	56.82	26.51	50.08	25.78	**.26 [.17, .34]**
Freedom							
7. Self	67.03	25.66	66.30	25.14	67.73	26.14	-.06 [-.14, .03]
8. Country	66.06	26.52	65.31	25.73	66.79	27.27	-.06 [-.14, .03]
Wealth							
9. Self	45.56	25.58	46.81	25.72	44.33	25.39	**.10 [.01, .18]**
10. Country	64.48	25.00	67.32	24.51	61.69	25.16	**.23 [.14, .31]**
11. SMA	11.19	5.38	11.59	5.65	10.79	5.08	**.15 [.06, .24]**
12. NMH	4.69	4.59	4.84	4.90	4.54	4.27	.07 [-.02, .15]
13. PMH	17.01	5.89	17.54	6.19	16.49	5.54	**.18 [.09, .27]**

Note. Aggregate = Mean of perceptions of belongingness, fairness, freedom, and wealth. SMA = social media addiction; NMH = negative mental health; PMH = positive mental health; bold values are significant at *p* < .05.

Table 3

Correlations between Study Variables

Variable	1	2	3	4	5	6	7	8	9	10	11	12	13
Aggregate													
1. Self	-												
2. Country	**.82**	-											
Belongingness													
3. Self	**.79**	**.64**	-										
4. Country	**.57**	**.70**	**.61**	-									
Fairness													
5. Self	**.86**	**.73**	**.59**	**.47**	-								
6. Country	**.71**	**.86**	**.54**	**.56**	**.71**	-							
Freedom													
7. Self	**.83**	**.73**	**.53**	**.38**	**.68**	**.58**	-						
8. Country	**.72**	**.84**	**.50**	**.42**	**.61**	**.64**	**.81**	-					
Wealth													
9. Self	**.74**	**.52**	**.42**	**.38**	**.50**	**.44**	**.45**	**.38**	-				
10. Country	**.55**	**.72**	**.37**	**.27**	**.48**	**.45**	**.50**	**.52**	**.42**	-			
11. SMA	-.01	.00	.04	**.19**	-.04	.02	**-.14**	**-.11**	**.11**	**-.07**	-		
12. NMH	**-.24**	**-.16**	**-.19**	.01	**-.23**	**-.13**	**-.27**	**-.21**	-.07	**-.15**	**.50**	-	
13. PMH	**.50**	**.38**	**.42**	**.27**	**.42**	**.32**	**.40**	**.31**	**.36**	**.27**	**-.10**	**-.48**	-

Note. $N = 2036$. Aggregate = Mean of perceptions of belongingness, fairness, freedom, and wealth. SMA = social media addiction; NMH = negative mental health; PMH = positive mental health; bold values are significant at $p < .05$.

Model Tests

Interaction effects between perceptions of freedom and social media addiction on mental health from the multiple regression models are shown in Table 4. Visual depictions of the interactions between the aggregate measures of freedom perceptions and social media addiction on mental health are shown in Figure 2 (see Figures S1 and S2 in the Supplemental Materials for visualizations broken down by each of the four perception types). The results showed two notable patterns. First, the interactions between *self*-perceptions of freedom and social media addiction were more consistently significant across the models predicting *negative* mental health, while the interactions between *country*-perceptions of freedom and social media addiction were more consistently significant across the models predicting *positive* mental health. Second, the significant interactions showed an asymmetry: Links between *self*-perceptions of freedom and fewer negative mental health symptoms were *weaker* among those reporting greater social media addiction, but the links between perceptions of one's *country* and positive mental health were

stronger among those addicted to social media. These findings suggest that beneficial links between perceptions of freedom and mental health are attenuated by social media addiction when the target of those perceptions is the self, but strengthened when the target is one's country.

Table 4

Interactions between Perceptions of Freedom and Social Media Addiction on Mental Health

| Perception | Interaction with social media addiction in predicting mental health | | | | | | | |
| | Self | | | | Country | | | |
	β (*SE*)	95% CI	*t*	*p*	β (*SE*)	95% CI	*t*	*p*
	Predicting *negative* mental health							
Aggregate	**.002 (.001)**	**[.001, .004]**	**3.31**	**<.001**	.001 (.001)	[.000, .003]	1.51	.132
Fairness	**.001 (.001)**	**[.000, .003]**	**2.18**	**.030**	**.001 (.001)**	**[.000, .002]**	**2.14**	**.032**
Belong	**.002 (.001)**	**[.001, .003]**	**3.01**	**.003**	**.002 (.001)**	**[.001, .003]**	**2.98**	**.003**
Freedom	.001 (.001)	[.000, .002]	1.41	.160	.000 (.001)	[-.001, .001]	.07	.947
Wealth	**.002 (.001)**	**[.001, .003]**	**3.02**	**.003**	-.001 (.001)	[-.002, .001]	-1.15	.250
	Predicting *positive* mental health							
Aggregate	.000 (.001)	[-.001, .002]	.46	.648	**.003 (.001)**	**[.001, .005]**	**2.83**	**.005**
Fairness	.001 (.001)	[-.001, .003]	1.02	.308	**.002 (.001)**	**[.001, .004]**	**2.81**	**.005**
Belong	**.002 (.001)**	**[.000, .003]**	**2.08**	**.038**	**.004 (.001)**	**[.002, .005]**	**4.16**	**<.001**
Freedom	.000 (.001)	[-.001, .002]	.50	.621	.002 (.001)	[.000, .003]	1.87	.061
Wealth	.001 (.001)	[-.001, .002]	.85	.397	**.002 (.001)**	**[.000, .004]**	**2.43**	**.015**

Note. $N = 2036$. Bolded values are significant at $p < .05$.

Figure 2

Interactions between Aggregated Perceptions of Freedom and Social Media Addiction on Negative (Top Panels) and Positive (Bottom Panels) Mental Health
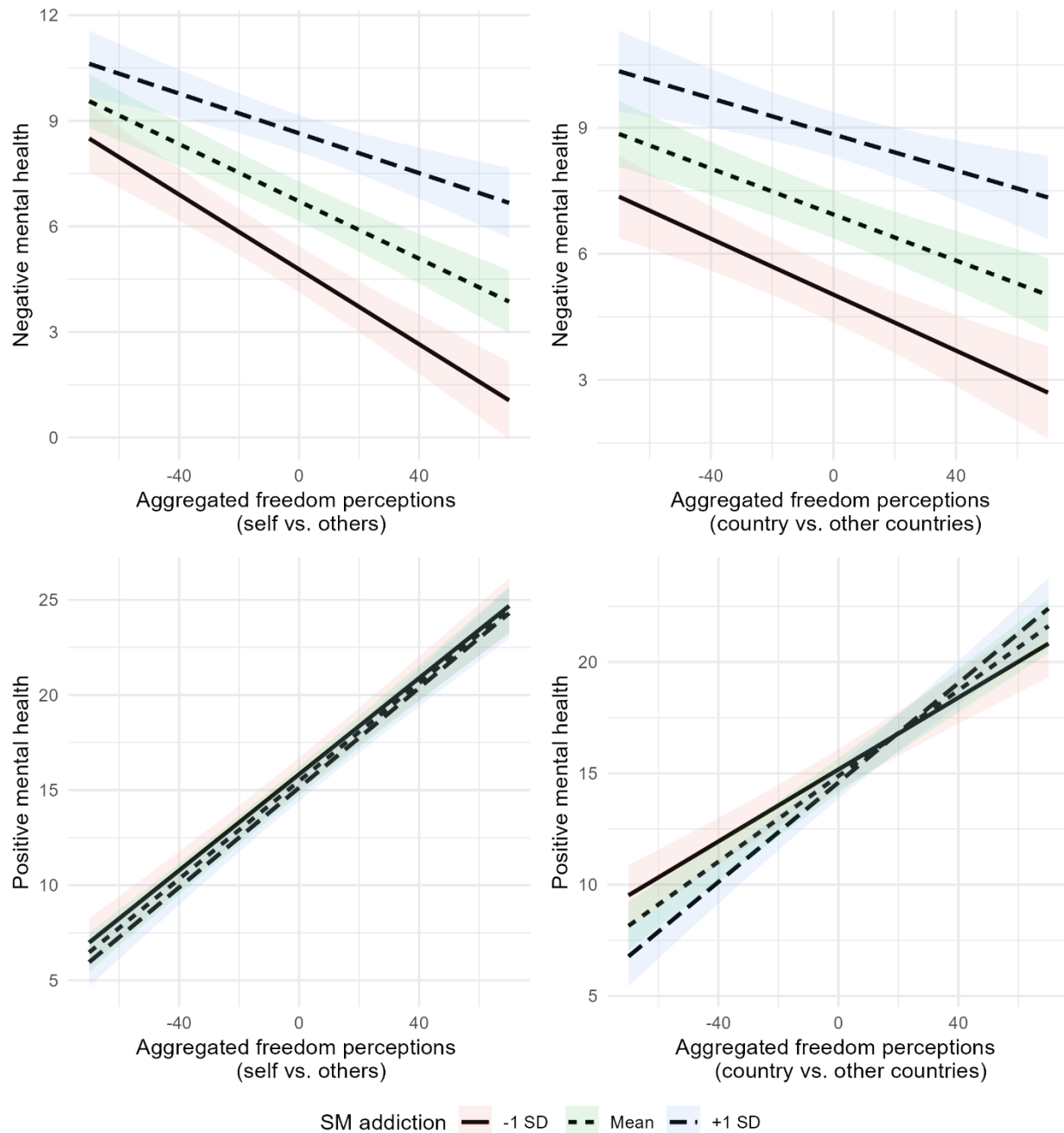
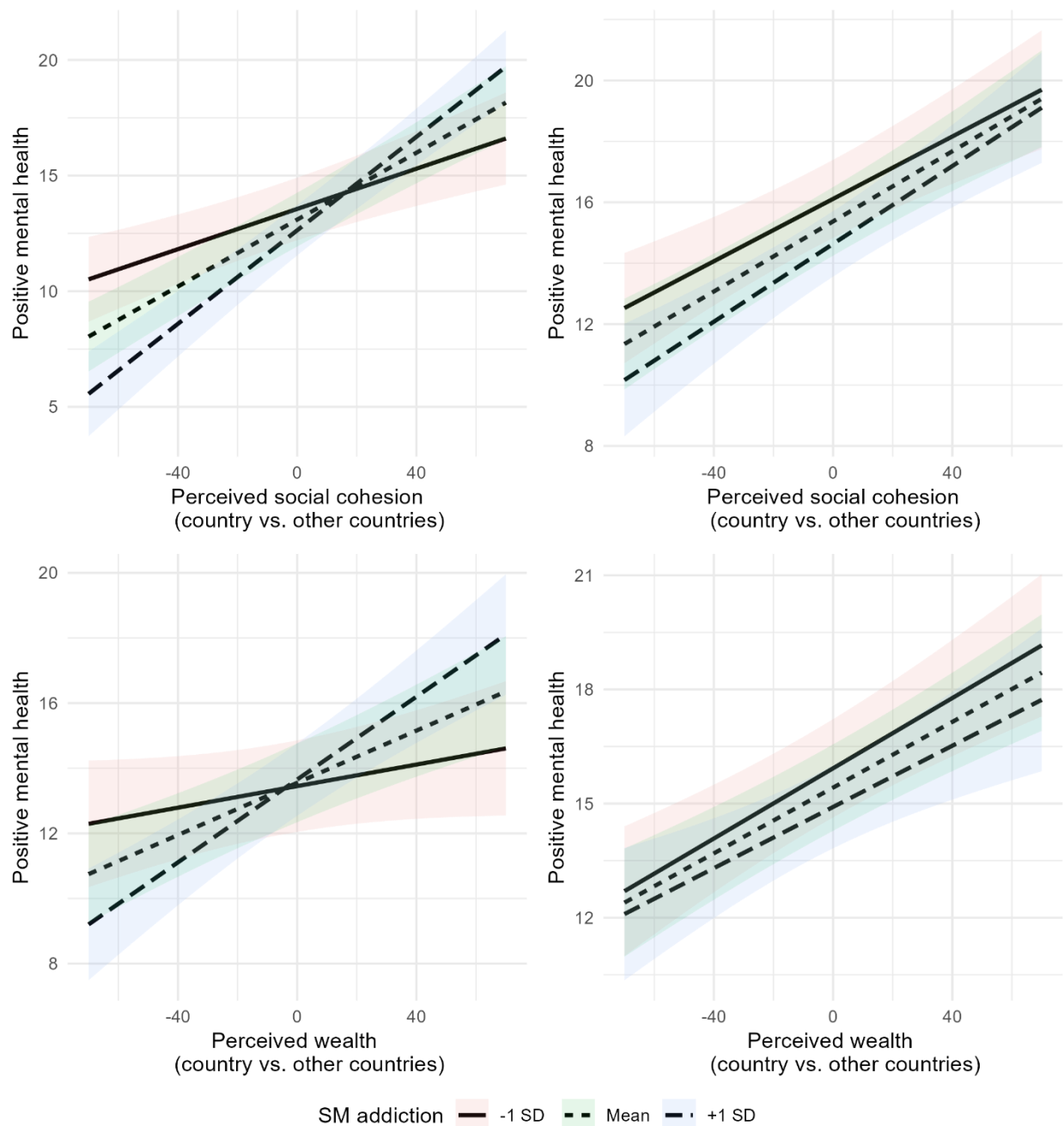*Note.* $N = 2036$. Models show effects controlling for age, gender, and socioeconomic status.

Testing Effects between Samples

We also noted differences in the study variables between samples: Americans perceived

higher levels of most of the freedom perceptions, social media addiction, and positive mental

health than Germans (Table 2). Thus, we explored whether there were any three-way interactions whereby the sample interacted with the perceptions and social media addiction on mental health. No significant three-way interactions appeared for any of the models regarding self-perception. Two significant interaction effects appeared for models regarding perceptions of one's country: The three way interactions between freedom perceptions, social media addiction, and sample on positive mental health were significant when the type of perception was how socially cohesive (β(*SE*) = .004(.002), 95% CI [.000, .007], t = -2.09, p = .036) and wealthy (β(*SE*) = .005(.002), 95%CI[.001, .008], t = -2.52, p = .012) one's country were. Figure 3 shows these interactions visually. In the American sample (left plots), social cohesion (β(*SE*) = .005(.001), 95% CI [.003, .008], t = 4.52, p < .001) and wealth (β(*SE*) = .004(.001), 95% CI [.002, .007], t = 3.43, p < .001) perceptions of one's country interacted with social media addiction on positive mental health. However, in the German sample (right plots), neither of the interactions were significant: social cohesion (β(*SE*) = .001(.001), 95% CI [-.001, .004], t = .90, p = .369) and wealth (β(*SE*) = -.001(.001), 95% CI [-.003, .002], t = -.43, p = .671). The findings suggest that only for Americans (not Germans) were links between perceptions of one's country as socially cohesive or wealthy and positive mental health pronounced among those reporting greater social media addiction.

Figure 3

Interactions between Perceptions of Social Cohesion and Wealth and Social Media Addiction on Positive Mental Health in United States (Left) and Germany (Right)

Note. Left column shows US Sample (*n* = 1007); right column shows German Sample (*n* = 1029). SM = social media. Models show effects controlling for age, gender, and socioeconomic status.

Discussion

Prior research identified links between perceptions indicative of freedom and mental health (Boyce et al., 2010; Callan et al., 2015; Scholten et al., 2017a; 2018), but did not consider the role of social media—a major social context from which freedom perceptions are likely to be derived from (Talaifar & Lowery, 2023). To build on and extend this literature, we conducted a cross-cultural study examining whether social media addiction moderated perceptions of freedom and mental health in two large representative samples of Americans and Germans. Our study contained several notable findings with theoretical and practical implications.

First, we found that four types of perception—belongingness, fairness, freedom, and wealth—shown to predict mental health (Boyce et al., 2010; Callan et al., 2015; Scholten et al., 2017a; 2018; Reichl et al., 2013) load strongly onto a single latent factor in confirmatory factor analyses. People derive self-perception by comparing themselves to others (Cooley, 1902; Festinger, 1954; Markus & Kitayama, 2010; Mead, 1934), including comparison to others in terms of the four types of perception that may reflect how free people feel in their social environments. These four perceptions were derived from the biopsychosocial perspective (Bronfenbrenner, 1979; Bronfenbrenner & Ceci, 1994; Engel, 1977; 1981; Vélez-Agosto et al., 2017). In the context of the present findings, considering how free people perceive themselves offers a parsimonious way to examine the relationship between mental health and different types of self-perception.

Second, we found that links between self-perceptions of freedom and lower levels of negative mental health symptoms were less pronounced among those reporting high levels of social media addiction. Reviews have noted complicated links between social media use and mental health and called for investigation into underlying mechanisms (e.g., Orben et al., 2024;

Valkenburg, 2022). Against this background, one possibility our findings suggest is that social media addiction may weaken the beneficial link between self-perceptions of freedom and mental health. Among those who perceive themselves as free, for example, being addicted to social media may distract users from social resources that confer the positive benefits of freedom perceptions (e.g., interrupting offline social interaction; Sbarra et al., 2019). Their greater sense of freedom may also encourage a positive framing of their addictive tendencies as freely chosen. Conversely, people who perceive themselves as lacking freedom may use social media as a coping mechanism (although not necessarily an effective one). Perhaps social media addiction for these individuals has little negative relation to their mental health because they already perceive themselves as lacking freedom. These possibilities raise questions about when freedom perceptions might not be uniformly positive across individuals. They also suggest the need to consider what is happening in users' lives (e.g., their offline environment) as a reference point for understanding social media effects, especially regarding mental health (see also Bunker & Kwan, 2024; Orben et al., 2024). Practitioners may consider how cognitive and behavioral tendencies indicative of social media addiction may have different relationships to mental health depending on how free their patients feel.

Third, we found that the links between perceptions of one's country and positive mental health were stronger among those addicted to social media. These findings contrast with the weakening moderation by social media addiction observed in the links between self-freedom perceptions and negative mental health. Follow-up analyses in our study suggest that American participants' perceptions of the social cohesion and wealth of the US may provide an explanation. Specifically, we found that Americans who perceived the US as more socially cohesive and wealthier than other countries reported greater positive mental health, especially if

they reported higher levels of social media addiction. Those addicted to social media in the US

may be more prone to nationalistic beliefs (and thus more likely to report positive mental health

feelings when perceiving one's country as freer). Indeed, mediated spaces among American users

have been shown to contain high levels of conflict about issues regarding social freedom (e.g.,

political polarization; Cole et al., 2023; Kubin & von Sikorski, 2021). Future research may

investigate why perceptions of freedom may show different interactions with social addiction on

mental health depending on the target of those perceptions.

Finally, it should be noted that while we observed interaction effects between social

media addiction and the aggregate measures of freedom perceptions and most of the individual

perception types on mental health, there were no significant interactions for the single item

representing explicit perceptions of freedom. Social perceptions concerning belongingness,

fairness, and wealth may translate to more concrete ways users (perceive they can) navigate their

environments (i.e., to be part of a group, to be treated well, or to have resources) compared to the

more abstract perception of asking about freedom without a specified context. Future research

may investigate whether certain types of freedom perceptions are more important for mental

health, especially considering how people may use social media in response to the freedoms (or

lack thereof) they perceive.

Limitations and Future Directions

The present study has limitations that future research may build on. First, we examined

the links between perceptions of freedom, social media addiction, and mental health in two

individualistic cultures (the US and Germany), relative to the rest of the world (Hofstede

Insights, 2023). These links may not be the same in collectivistic cultures. Collectivistic cultures

tend to have stricter norms surrounding free expression (Gelfand et al., 2011; Triandis, 1995),

show different patterns of social media use than individualistic cultures (Cheng et al., 2021), and different self-construals (Markus & Kitayama, 2010; Triandis, 1995). Understanding the relations between how people may use social media in relation to their perceptions of freedom and mental health in collectivistic cultures will be key to understanding the social and psychological well-being of an increasingly digital world.

Second, our indicators of negative mental health in our study focused on state-level symptoms of depression, anxiety, and stress (Lovibond & Lovibond et al., 1995; Nilges & Essau, 2015; Scholten et al., 2017b) while the positive mental health scale we used (Bieda et al., 2017; Lukat et al., 2016) concerned more holistic, trait-level perceptions of how well one's life is going. This limitation may have influenced our findings showing that while social media addiction moderated the relationships between self-perceptions of freedom and mental health more consistently for negative mental health indicators than positive ones, the opposite was the case for perceptions of freedom regarding one's country. Future research may wish to investigate whether the relationships between social media use, perceptions of freedom, and mental health vary depending on symptomatic/state-level vs. holistic/trait-level indicators of mental health.

Finally, the findings in the present study were based on correlational analyses. We cannot address the causal relationships between perceptions of freedom, social media addiction, and mental health. It's possible that social media addiction arises out of perceptions of freedom in the offline world and then impacts mental health. However, social media addiction may alternatively shape perceptions of freedom. Future research may consider experimental or longitudinal designs to compare the directional influences between perceptions of freedom, social media addiction, and mental health.

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