



## Full length article

## Social media ostracism: The effects of being excluded online



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## ARTICLE INFO

## Article history:

Received 17 August 2016  
 Received in revised form  
 27 February 2017  
 Accepted 24 March 2017  
 Available online 27 March 2017

## Keywords:

Social exclusion  
 Social media  
 Fundamental human needs  
 Facebook  
 Ostracism Online paradigm

## ABSTRACT

In times of being always online and connected, cyberostracism—the feeling of being ignored or excluded over the Internet—is a serious threat to fundamental human needs: belonging, self-esteem, control, and meaningful existence. According to the temporal need-threat model, responses to ostracism lead to immediate and universal experiences of negative emotions as well as to thwarted need satisfaction. In two experiments ( $N_1 = 105$ ;  $N_2 = 85$ ), we investigated these effects using a new computerized tool, *Ostracism Online* (Wolf et al., 2015). In both studies we found that ostracism negatively affected emotional states, belongingness, self-esteem, and meaningful existence but not control. Furthermore, Facebook use as a coping strategy after being excluded had no significant impact on need restoration. In sum, our findings highlight that *Ostracism Online* is a useful tool to connect the research area of social media and ostracism.

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## 1. Introduction

The ever-increasing spread and permanent availability of mobile Internet technology enable people to access online content seemingly independent from time and space (Vorderer & Kohring, 2013). Nowadays, seeking connection with family and peer members primarily depends on the availability of communication technologies, which are carried along with us most of the time (Turkle, 2011). According to a recent survey by the Pew Research Center (Rainie & Zickuhr, 2015), 92% of U.S. adults now own a cellphone and 36% said they never turn their device off, suggesting that people are continuously spending their lives “permanently online [and] permanently connected” (Vorderer, Krömer, & Schneider, 2016; Vorderer et al., 2015).

In order to sustain this feeling of permanent connection and “always on life”, social networking sites (SNS) such as Facebook, with over 1.49 billion active users every month (Facebook, 2015), offer users a plethora of features to approach and feel related to

each other (cf. Smock, Ellison, Lampe, & Wohn, 2011). For example, previous studies have shown that an increase in Facebook status updates reduced individuals' levels of loneliness. The feeling of having a daily connection to friends mediated this effect (große Deters & Mehl, 2013). Further, general Facebook use has been linked to feelings of online social connectedness (Grieve, Indian, Witteveen, Tolan, & Marrington, 2013) and has been described as a coping strategy to deal with offline disconnections (Sheldon, Abad, & Hinsch, 2011). These findings indicate the potential of SNS to permanently connect its users to the (online) world. However, at the same time, another branch of research systematically deals with how social media may elicit feelings of being ignored or excluded by peers or groups in a mediated context (Vorderer & Schneider, 2017): These studies investigate a phenomenon that has been labeled *cyberostracism* (Williams, Cheung, & Choi, 2000). Previous research indicated that brief episodes and minimal signals of ostracism were sufficient to threaten fundamental human needs of belonging, self-esteem, control, and meaningful existence, and

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were further linked to heightened negative affect (for overviews, see Williams, 2007, 2009). With regard to social media, for example, waiting for a response after the “seen” function in an instant messenger indicated that a message has been read (Mai, Freudenthaler, Schneider, & Vorderer, 2015), could elicit the feeling of ostracism if the respondents do not answer immediately. Similar effects have been found when individuals were waiting for a response after their status updates had been posted on the Facebook wall (Tobin, Vanman, Verreynne, & Saeri, 2014). Given these detrimental effects and the number of people that are almost permanently accessing social media, furthering the systematic knowledge on how these sites can trigger feelings of being ostracized is highly relevant.

Thus, the aim of the present work was to examine the effects of ostracism in a social media environment and extend previous investigations by using a new experimental paradigm to manipulate ostracism in such an environment—the *Ostracism Online* tool (Wolf et al., 2015).

In the first study, we were mainly interested in replicating Wolf et al. (2015) findings by investigating ostracism effects on human needs and mood—manipulated within a German version of the *Ostracism Online* tool.

The second study aimed to broaden the scope of *Ostracism Online*: First, as social media ostracism has shown to reduce well-being in previous research (Ruggieri, Bendixen, Gabriel, & Alsaker, 2013), we extended the dependent constructs from Study 1 by including emotional and psychological well-being. Furthermore, we added an ingroup/outgroup manipulation as second condition, because previous findings in the ostracism literature were controversial with regard to the role of in- and outgroups (e.g., Bernstein, Sacco, Young, Hugenberg, & Cook, 2010; Gonsalkorale & Williams, 2007; Sacco, Bernstein, Young, & Hugenberg, 2014). To delineate these findings and to practically test how feasible it would be to manipulate ingroup/outgroup within the *Ostracism Online* tool we added this second factor. Finally, recent research has shown that Facebook use might restore thwarted needs (große Deters & Mehl, 2013; Grieve et al., 2013; Knäusenberger, Hellmann, & Echterhoff, 2015). Therefore, we were interested in the question if Facebook use could also function as a coping-mechanism after social exclusion.

## 2. Theoretical background

### 2.1. The temporal need-threat model

In the context of Baumeister and Leary's (1995) influential article discussing the important role of the need to belong and sociometer theory (e.g., Leary, Tambor, Terdal, & Downs, 1995), a “Zeitgeist” for ostracism developed (Williams, 2009). Since then, the phenomenon has been widely discussed in literature due to its negative consequences for the individual's physical and mental health. To explain the harmful effects of ostracism on fundamental human needs, Williams (1997, 2009) developed the *temporal need-threat model* consisting of three stages. 1) In the *reflexive stage*, having detected only minimal signs of ostracism, the affected individuals feel social pain in terms of negative affect, because they experience their belonging, self-esteem, meaningful existence, and control needs are threatened. 2) Afterwards, the individuals start to reflect on the meaning of the ostracism episode and try to fortify the threatened needs. During this so-called *reflective stage*, contextual factors and the individual's character play an important role for restoring need-levels. 3) In case of prolonged ostracism, the individuals' resources for coping with the effects of ostracism are depleted leading to a *resignation stage*. The inability to fortify the thwarted needs is likely to lead to alienation, depression,

helplessness, and unworthiness signifying a form of “social death” (Williams & Nida, 2011, p. 71).

In accordance with Williams (1997, 2009), many studies found that face-to-face ostracism threatens the fundamental needs of belonging, self-esteem, meaningful existence, and control (Gerber & Wheeler, 2009; Williams & Sommer, 1997; Williams et al., 2002). However, social exclusion can also occur in the online world as cyberostracism (Williams et al., 2000). For instance, both online and in-person experiences of ostracism affect people in the same way (Filipkowski & Smyth, 2012). A recent study examined the effects of lacking feedback on Facebook status updates (Tobin et al., 2014). Participants who did not receive any feedback on their status updates had lower levels on belonging, self-esteem, meaningful existence, and control.

### 2.2. Manipulating ostracism

Various paradigms have been applied to investigate the consequences of being ostracized, rejected, or socially excluded in social settings online as well as offline (for an overview, see Vorderer & Schneider, 2017; Wolf et al., 2015). By far the most applied paradigm to study the effects of ostracism is Cyberball (Hartgerink, van Beest, Wicherts, & Williams, 2015; Williams & Jarvis, 2006; Williams et al., 2000). In this paradigm, participants sit in front of a computer and are supposed to engage in a ball-tossing game in which they have to mentally visualize who they are playing with. Although participants are told that the researchers are not interested in who receives the ball, in actuality, participants either receive the ball throughout the game (inclusion) or do not receive the ball again after a couple of initial throws (exclusion).

Despite the great utility and success of Cyberball and other paradigms for assessing the effects of cyberostracism (for overviews see Vorderer & Schneider, 2017; Wesselmann & Williams, 2011), they fall short for investigating the effects of ostracism in a social media environment. For example, these paradigms lack the opportunity for providing social feedback in a way that is typical for social media such as “Like” buttons or comments, which are very popular tools on SNS (cf. Smock et al., 2011). Thus, Wolf et al. (2015) took an important step in introducing a new paradigm called *Ostracism Online* in order to allow researchers the manipulation of social media settings, to keep social interactions experimentally controlled, and to study subsequent within-group behavior. By applying the paradigm, the researchers were able to identify analogous effects on need-threats and mood. Nonetheless, to our best knowledge, no further studies have tried to implement *Ostracism Online* as a research tool yet.

Thus, as the present studies focus on ostracism effects in a social media environment, we used this new paradigm: In contrast to Cyberball, it features more possibilities of manipulation (e.g., content of summaries, social cues) and complements ostracism research methodology due to the researcher's ability to program and hence control social interactions.

## 3. Study 1

In Study 1, our aim was to replicate the findings of Wolf et al. (2015) for a German sample. In line with William's need-threat model and present research on ostracism (for meta-analytic overviews, see Gerber & Wheeler, 2009; Hartgerink et al., 2015), we derived the following hypotheses:

**H1a.** Excluded individuals experience lower levels of belonging, self-esteem, meaningful existence, and control than included individuals.

**H1b.** Excluded individuals experience a worse mood than

included individuals.

Furthermore, we were interested in the role of self-esteem due to its special status in ostracism literature. As Gerber and Wheeler (2009) argue, self-esteem might not be a distinct basic need but rather another important precursor that indicates whether belonging, meaningful existence, and control are satisfied or threatened. Therefore, we assume that the effects of ostracism depend on the individuals' state self-esteem.

**H2.** Effects of ostracism on belonging, meaningful existence, and control are moderated by self-esteem in such a way that excluded individuals with lower self-esteem are more threatened in their needs and more negatively influenced in their mood than excluded persons with higher self-esteem.

3.1. Method

To test our hypotheses, we conducted an online experiment with a 2 (self-esteem: low vs. high) × 2 (ostracism: exclusion vs. inclusion) between-subject design.

3.1.1. Manipulation

Ostracism Online (see above, Wolf et al., 2015) was used to manipulate inclusionary status (see <http://smpo.github.io/socialmedia/> for a demo version). The instructions were translated into German and introduced the subsequent part of the study as a real time group task via Internet. For this purpose, participants were required to choose a name, an avatar, and write a short self-description to introduce themselves to their fellow participants in the following group situation. In reality, the group consisted of computerized profiles. Participants were asked to read the others' descriptions. In addition, they were asked to imagine how these individuals might be in real life and click the Like-button below the different descriptions to give positive feedback; all within a period of three minutes. The number of Likes every single profile received and notifications about Likes concerning one's own profile were displayed. For instance, a participant in the exclusion condition got only one Like at the very beginning of the three-minute period, whereas a participant in the inclusion condition received six Likes.

Furthermore, self-esteem was manipulated via false feedback to a number of problem-solving tasks (i.e., analogies, numerical series, logical inferences, and knowledge questions). Participants either received a positive feedback or were informed about their poor results regardless of their actual performance at random.

3.1.2. Participants and procedure

Originally, a convenience sample recruited online consisted of 113 student participants who completed the whole questionnaire. Eight participants were removed due to careless or missing self-descriptions and missing data, thus the final sample included information of 105 cases. On average, participants were 25 years old ( $M = 24.77$ ,  $SD = 10.05$ , range: 15–59 years), most of them were female (67.6%), and possessed a general qualification for university entrance (71.4%) or had already finished university (14.3%).

First, participants solved the problem-solving tasks. After assessing self-esteem, they were randomly assigned to the exclusion or the inclusion condition of the Ostracism Online tool. Hereafter, participants were redirected to the second part of the study starting with control questions about technical issues, attentiveness, and credibility of the group task. Subsequently, need satisfaction and mood were assessed. Moreover, the participants were asked to answer questions about their social media usage, the importance of social media for themselves and demographic information. Afterwards, we let the participants estimate the number

of received likes for their profiles and the number of profiles presented. In the end, the participants were fully debriefed and thanked.

3.1.3. Measures

In order to check if the manipulation of self-esteem worked, the participants answered the Rosenberg Self-Esteem Scale (RSES) by Rosenberg (1965). The German version of this widely used, valid and reliable Likert scale of global self-esteem is also applicable to assess state self-esteem by asking participants to reflect on their current feelings (Collani & Herzberg, 2003). The ten items (e.g., "I take a positive attitude toward myself") were measured on a 4-point scale, ranging from 1 (*strongly disagree*) to 4 (*strongly agree*).

All following items were measured on a 5-point Likert scale ranging from 1 (*strongly disagree*) to 5 (*strongly agree*).

To validate our experimental manipulation of inclusionary status, we used the mean score of the following three items: "I feel ignored", "I feel excluded", and the inverse-coded "The others liked my description" (Cronbach's  $\alpha = 0.76$ ).

Need satisfaction was measured with five items for each of the four needs (van Beest & Williams, 2006): Belonging (e.g., "I felt rejected"), Self-esteem (e.g., "I felt insecure"), Meaningful Existence (e.g., "I felt invisible"), and Control (e.g., "I felt the other players decided everything"). The original items were translated into German by the authors.

Mood was assessed by asking participants if they were feeling "good", "bad", "friendly", "unfriendly", "angry", "pleasant", "happy" or "sad."

Table 1 shows means, standard deviations, Cronbach's  $\alpha$ s, and Pearson correlations between all measures.

3.2. Results

3.2.1. Manipulation checks

Manipulation checks indicated that participants internalized the ostracism manipulation in terms of the Like button well. On average, ostracized participants felt significantly more ignored and excluded and thought that the others did not like their description ( $M = 2.55$ ,  $SD = 0.80$ ,  $n = 49$ ) than included people ( $M = 1.60$ ,  $SD = 0.55$ ,  $n = 56$ ), Welch's  $t(82.78) = 7.03$ ,  $p < 0.001$ ,  $d = 1.40$ . Moreover, there was a significant difference between included and excluded participants, such that those being ostracized stated to have received less Likes ( $M = 1.22$ ,  $SD = 0.42$ ) than included people ( $M = 2.39$ ,  $SD = 0.53$ ), Welch's  $t(102.17) = -12.59$ ,  $p < 0.001$ ,  $d = 2.44$ . However, participants in the self-esteem conditions did not significantly differ from each other with regard to their self-esteem after the manipulation with negative ( $M = 2.99$ ,  $SD = 0.58$ ,  $n = 50$ ) and positive feedback ( $M = 3.14$ ,  $SD = 0.64$ ,  $n = 55$ ),  $t(103) = -1.289$ ,  $p = 0.63$ , Cohen's  $d = 0.25$  (consequently, we could not test H2).

3.2.2. Attentiveness and technical difficulties

The average self-rated attentiveness was satisfying ( $M = 4.21$ ,

**Table 1**  
Means, standard deviations, intercorrelations, and internal consistencies of scales.

	<i>M</i>	<i>SD</i>	1	2	3	4	5	6
1. Trait self-esteem	3.07	0.61	<i>0.88</i>					
2. Belonging	3.32	0.74	0.14	<i>0.66</i>				
3. Self-esteem	3.35	0.74	0.26	0.49	<i>0.79</i>			
4. Meaningful existence	3.37	0.73	0.25	0.52	0.55	<i>0.69</i>		
5. Control	2.38	0.66	0.11	0.18	0.27	0.19	<i>0.58</i>	
6. Mood	3.82	0.77	0.23	0.50	0.48	0.44	0.18	<i>0.90</i>

Note.  $N = 105$ . All correlations above  $r = 0.20$  are significant at an alpha-level of 0.05. Cronbach's  $\alpha$ s are in italics along the diagonal.

$SD = 0.77$ ). In addition, we indirectly measured attentiveness by asking the participants to mention the total amount of profiles and the number of Likes they achieved from other participants (cf. Wolf et al., 2015). On average, the participants' perceptions corresponded to the real amount of presented profiles and received Likes, indicating as well that the participants were attentive. At last, there were no technical difficulties concerning the personal avatars of the other people, their introduction texts, and the Like button.

### 3.2.3. Effects of ostracism on need satisfaction and mood

We conducted a multivariate analysis of covariance (MANCOVA), controlling for trait self-esteem. The multivariate effect of ostracism was significant, Pillai's Trace  $V = 0.40$ ,  $F(5, 98) = 13.10$ ,  $p < 0.001$ ,  $f = 0.67$ . See Table 2 for estimated means and univariate effects. Univariate effects of ostracism on belonging, self-esteem, meaningful existence, and mood showed that excluded participants were significantly more threatened in their needs and in a worse mood than included participants. Thus, the results are in line with H1a and H1b—with the exception of control.

### 3.2.4. The role of trait self-esteem

In the MANCOVA described above, the covariate trait self-esteem was also significantly related to needs and mood,  $V = 0.11$ ,  $F(5, 98) = 2.80$ ,  $p = 0.049$ ,  $f = 0.19$ . More specifically, univariate tests showed that it significantly affected self-esteem,  $F(1, 102) = 8.61$ ,  $p = 0.004$ ,  $f = 0.29$ , meaningful existence,  $F(1, 102) = 6.94$ ,  $p = 0.010$ ,  $f = 0.26$ , and mood,  $F(1, 102) = 5.37$ ,  $p = 0.022$ ,  $f = 0.23$ , but not belonging,  $F(1, 102) = 1.98$ ,  $p = 0.163$ ,  $f = 0.14$ , and control,  $F(1, 102) = 1.16$ ,  $p = 0.284$ ,  $f = 0.11$ . This raises the question whether it is possible to examine H2 with trait self-esteem as a quasi-experimental factor. Thus, we inspected the moderator effects of trait self-esteem by including an interaction term in the MANCOVA but found no significant effect of the Ostracism x Trait Self-esteem interaction,  $V = 0.06$ ,  $F(5, 97) = 1.18$ ,  $p = 0.325$ ,  $f = 0.06$ .

## 3.3. Discussion

One purpose of this study was to find out to what extent ostracism influences fundamental human needs and mood within a German version of the Ostracism Online paradigm—that is, to replicate the findings of Wolf et al. (2015) with a German sample. We found strong effects on belonging, self-esteem, and meaningful existence, which is in line with H1a. However, we found no effect on control. One reason could be the rather low Cronbach's  $\alpha$  of 0.58 (Wolf et al., 2015:  $\alpha = 0.71$ ). However, although optimizing the scale by deleting two items resulted in  $\alpha = 0.76$ , this did not change anything with regard to the results of the MANCOVA. Another explanation could be that—in contrast to the Cyberball paradigm—participants believed to be controlling the situation through the opportunity to like or not like other profiles. We will discuss this possibility in the General Discussion in more detail.

Second, in accordance with H1b, we found a strong effect of

ostracism on mood. As only few studies on ostracism so far have shown that mood is influenced by ostracism (Gerber & Wheeler, 2009; Wolf et al., 2015), this result could be due to the new manipulation with the Ostracism Online paradigm and warrants further investigation. Thus, one aim of our second study was to examine whether this effect holds true for emotional well-being as a mood-related construct.

Third, we could not test our second hypothesis because of the failed manipulation of self-esteem via false feedback (as indicated by our non-significant manipulation check). One reason might be that some participants became suspicious after receiving a negative feedback although they had the feeling to have done everything right in the problem-solving tasks. Some participants also indicated that they were familiar with the false feedback method. It might be possible that others knew this manipulation too, but did not mention this. Unfortunately, we did not include a suspicion check concerning this manipulation; therefore we cannot rule out this possibility. In addition, a more sensitive manipulation check would have been helpful. Although there are some studies that successfully applied the Rosenberg self-esteem scale to measure change in self-esteem in longitudinal or experimental designs (e.g., Clerkin, Smith, & Hames, 2013; Filipkowski & Smyth, 2012, Study 2; Gentile, Twenge, Freeman, & Campbell, 2012), it is a measure designed to assess trait self-esteem. However, to check whether the self-esteem manipulation exerted its influence undetected by our self-esteem measure and beyond the ostracism manipulation, we ran a  $2 \times 2$  MANCOVA with self-esteem as a second factor. Results showed that self-esteem did neither influence the needs and mood directly, nor were the effects of ostracism dependent on the levels of self-esteem. Thus, even if the manipulation had been successful but undetected, the differences might have been cancelled out during the Ostracism Online phase.

Last, examining the role of trait self-esteem as a moderator yielded no significant results. Nevertheless, trait self-esteem was an important predictor for self-esteem, meaningful existence, and mood, and thus, was also included in our second study.

## 4. Study 2

### 4.1. Ostracism and well-being

Prior research has led to controversial findings concerning the link between SNS use and media users' well-being. On the one hand, Facebook use seems to sustain users' social capital (Ellison, Steinfield, & Lampe, 2007) and feeling of connectedness (Grieve et al., 2013), thereby increasing the well-being especially of users with low life-satisfaction. Knausenberger et al. (2015) found that showing the Facebook icon helped excluded users to remind them of their connectedness. On the other hand, the use of Facebook might be inferior to offline contexts in terms of emotional or instrumental support and predominantly social support transacted in offline contexts might contribute to overall life satisfaction (Trepte, Dienlin, & Reinecke, 2014). Other research suggests that the tone of the feedback is important. Negative feedback on a SNS profile decreased self-esteem and well-being, whereas positive feedback enhanced self-esteem and well-being (Valkenburg, Peter, & Schouten, 2006). Furthermore, the motive of seeking connectedness mediates the effects of the social use of media on well-being, whereas the motive of avoiding social isolation does not (Ahn & Shin, 2013). Finally, especially the passive use of Facebook seems to be detrimental to affective well-being (Verduyn et al., 2015).

However, considering the relation between well-being and social media use, there is still little knowledge on how situations of exclusion in social media based environments affect users' well-

**Table 2**  
Estimated means and standard errors of needs and mood (MANCOVA, Study 1).

	Exclusion ( $n = 49$ )		Inclusion ( $n = 56$ )		Main effects of ostracism			
	<i>M</i>	<i>SE</i>	<i>M</i>	<i>SE</i>	<i>F</i>	<i>df</i>	<i>p</i>	<i>f</i>
Belonging	2.89	0.09	3.69	0.08	42.70	1, 102	<0.001	0.65
Self-esteem	2.96	0.09	3.69	0.08	36.61	1, 102	<0.001	0.60
Meaningful existence	3.10	0.10	3.60	0.09	14.88	1, 102	<0.001	0.38
Control	2.35	0.09	2.40	0.09	0.14	1, 102	0.709	0.03
Mood	3.62	0.10	4.01	0.10	7.49	1, 102	0.007	0.27

Note.  $N = 105$ . All estimated means are controlled for the effects of trait self-esteem.

being. Although research on ostracism in the online world found that participants felt greater negative affect when anticipating to be excluded in a face-to-face situation rather than in a chat room setting (Filipkowski & Smyth, 2012),—presumably due to the anonymity chat rooms provide—little is known how this effect holds across SNS that provide a myriad of personal and social cues. Therefore, the first aim of Study 2 was to replicate the effects of Study 1 on need-threats and mood and to extend the causal chain by examining how feelings of exclusion relate to well-being. Considering a generally positive connection between satisfied needs and life satisfaction (Ryan & Deci, 2000), we hypothesize that

**H1a.** Excluded individuals experience lower levels of belonging, self-esteem, meaningful existence, and control than included individuals.

**H1b.** Excluded individuals experience lower levels of emotional and psychological well-being than included individuals.

#### 4.2. Ostracism by ingroup/outgroup-members

The second goal of Study 2 was to investigate if and how exclusions by members of an ingroup (i.e., a group a person identifies with) versus outgroup (i.e., a group a person does not identify with; for an overview of intergroup relations, see e.g., Tajfel, 1982) affect people differently, and to practically test the feasibility of the Ostracism Online tool for this particular manipulation. Literature on ostracism suggests that being excluded by an otherwise despised outgroup such as the Ku Klux Klan leads to similar effects as being excluded by members of an ingroup (Gonsalkorale & Williams, 2007). Other findings indicate stronger effects for people who are excluded or included by their ingroup compared to exclusion or inclusion by an outgroup (Bernstein et al., 2010; Sacco et al., 2014). For instance, Bernstein et al. (2010) observed that rejection and inclusion by an ingroup hurts more and feels better, respectively, compared to outgroup members. However, they suggest that the distinction between trivial ingroups (e.g., smoking groups) and ingroups that are essential to social identity (e.g., racial minorities) has to be taken into account when comparing ostracism by ingroup versus outgroup members. In the same vein, individuals reacted stronger to exclusion or inclusion if they perceived themselves similar to the ingroup members (Sacco et al., 2014). Due to the described lack of consistent findings in prior studies and the novelty of the Ostracism Online paradigm, we propose the following research question:

**RQ1.** Does perceived group similarity moderate the effects of ostracism on need-threats and well-being? (RQ1)

#### 4.3. Ostracism and coping

Finally, in light of the permanent accessibility of online content, we were interested in how Facebook use can serve as a coping strategy following social exclusion. According to the reflective stage of Williams (2009) temporal need-threat model, ostracized individuals “should feel, think, and act in ways that will fortify the most saliently threatened need(s)” (p. 296). For example, individuals, who were excluded in an anonymous online chat room, used harsher language in order to reclaim a sense of control over the situation, a behavior that was labeled “virtual bravado” (Williams et al., 2002). Williams et al. (2002) argued that this behavior was likely exerted due to the provided anonymity of online chat rooms, a scenario that might not hold on SNS, considering the high amount of (personal) information that users reveal on

these sites. Therefore, SNS use might rather serve as a coping strategy for ostracized individuals by behaviors such as presenting users pictures or entries of prior group experiences, which have successfully been linked to need restoration (Gardner, Pickett, & Knowles, 2005). Furthermore, Williams (2001) suggests that “self-esteem may be regained by increasing one's self-importance or by remembering past achievements” (p. 64) and that meaningful existence can be fortified by reasserting one's sense of purpose. In accordance, Toma and Hancock (2013, p. 325) argue that exposing Facebook users to their own profile raised their state self-esteem, which could serve excluded individuals as means to regain their sense of self-worth. As profiles of Facebook users usually display idealized versions of their lives, meaningful existence might be regained by looking at significant prior achievements on users' timelines.

Additionally, the use of Facebook might serve as an effective coping strategy to recover from social exclusions. It can help to alleviate feelings of loneliness (große Deters & Mehl, 2013), to establish the feeling of being socially connected online (Grieve et al., 2013), and to deal with offline disconnections (Sheldon et al., 2011). Furthermore, even subtle reminders of Facebook, such as its logo, can dispense with compensatory affiliation attempts after exclusion, especially in more socially minded Facebook users (Knausenberger et al., 2015).

Considering the diverse features that Facebook offers (Smock et al., 2011), we were interested to what extent Facebook use following social exclusion can actually help individuals to restore their threatened needs. For example, ostracized individuals might use rather prosocial features, such as chatting, commenting, or liking other content to restore their sense of belongingness. Furthermore, given that Facebook also provides plenty of opportunities for self-determined, autonomous behavior (Reinecke, Vorderer, & Knop, 2014), the mere use might remember ostracized individuals to be in control over the situation and thus holds a potential to restore individuals' sense of control. However, research to this end is missing. Therefore, we address the following research question:

**RQ2.** Is the use of Facebook an appropriate coping strategy following social exclusion to fortify threatened needs?

#### 4.4. Method

In order to test our hypotheses we created a 2 (ostracism: exclusion vs. inclusion) x 2 (group membership: ingroup vs. outgroup) x 2 (coping: Facebook use vs. control) design.

##### 4.4.1. Manipulation

The alteration of inclusion status was obtained with the same treatment within Ostracism Online as in Study 1. The second manipulation with regard to ingroup and outgroup was created by using two sets of fake profiles that differed in their educational (e.g., students of communication science as the ingroup condition and students of biology or business studies as the outgroup condition) and ethnic (e.g., foreign-looking avatars and names as a characteristic of the outgroup) background.

##### 4.4.2. Participants

Participants were recruited within introductory courses in communication science from two universities in Germany. Eighty-six participants completed the online-questionnaire. One case was removed for careless profile description. Thus, the final  $N$  was 85. On average, participants were 21 years old ( $M = 21.28$ ,  $SD = 2.91$ , range = 18–35), mainly female (75%), and had a German

background (mother tongue: 95%, country of origin: 92.7%).<sup>1</sup>

#### 4.4.3. Procedure

Students were invited via e-mail to participate in an online-study. After the welcome page, they were asked to indicate whether they have an active Facebook account, have used Facebook during the last three months, and to specify their Facebook use in general and with regard to specific features during the last three months.

Afterwards, people were randomly assigned to one of four groups created by ostracism and group membership conditions. Once participants finished their three-minute period in the *Ostracism Online* tool, they were redirected to the questionnaire that continued mood assessment followed by technical checks (cf. Study 1). Then we measured need satisfaction and well-being, provided the manipulation checks, and randomly assigned the participants to one of two coping-conditions: Whereas the participants in the control group were told to read a text about migrating birds followed by open text-related questions, participants in the Facebook group were instructed to use Facebook for five minutes. In order to make sure they could concentrate on their Facebook activity, we delayed the continuation of the questionnaire and also implemented a countdown that ended with an acoustic signal. Following this activity we measured need satisfaction and well-being a second time. Last, sociodemographic data were collected along with general attention and pre-existing knowledge about the paradigm. Participants were thanked and fully debriefed.

#### 4.4.4. Measures

All items were answered on a 7-point Likert scale ranging from 1 (*strongly disagree*) to 7 (*strongly agree*) unless otherwise noted.

To assess the success of the ostracism treatment, the same three items as in Study 1 were used (Cronbach's  $\alpha = 0.82$ ). The ingroup/outgroup manipulation was checked with one item, namely "The other students are similar to me."

Information about recent Facebook activity was obtained based on an extended version of single items by Smock et al. (2011). The 16 items were translated by the authors to measure user frequency of different features (e.g., "I used the comments feature on Facebook;"  $\alpha = 0.83$ ) on a 7-point scale ranging from 1 (*not at all*) to 7 (*very often*).

Trait self-esteem was assessed via the Rosenberg Self-Esteem scale ( $\alpha = 0.90$ ).

After inducing ostracism ( $t_1$ ) and after the coping condition ( $t_2$ ), we used the need threat scale (van Beest & Williams, 2006) to measure the four dimensions Belonging ( $\alpha_{t_1} = 0.73$ ,  $\alpha_{t_2} = 0.66$ ), Self-esteem ( $\alpha_{t_1} = 0.83$ ,  $\alpha_{t_2} = 0.85$ ), Meaningful Existence ( $\alpha_{t_1} = 0.70$ ,  $\alpha_{t_2} = 0.76$ ), and Control ( $\alpha_{t_1} = 0.47$ ,  $\alpha_{t_2} = 0.71$ ).<sup>2</sup>

To assess emotional well-being, Diener et al.'s (2010) Scale of Positive and Negative Experience (SPANE) was applied. The SPANE consists of 12 items with six items to assess positive feelings (SPANE-P,  $\alpha_{t_1} = 0.90$ ,  $\alpha_{t_2} = 0.91$ ) and six items to assess negative feelings (SPANE-N,  $\alpha_{t_1} = 0.91$ ,  $\alpha_{t_2} = 0.91$ ). For both types of items, three of them are general (e.g., positive, negative) and three per subscale are more specific (e.g., joyful, sad).

To measure psychological well-being we used the Flourishing scale (Diener et al., 2010). It comprises eight items for assessing

self-perceived success in important areas such as relationships, self-esteem, purpose, and optimism (e.g., "I lead a purposeful and meaningful life" and "I am competent and capable in the activities that are important to me";  $\alpha_{t_1} = 0.82$ ,  $\alpha_{t_2} = 0.82$ ).

## 4.5. Results

### 4.5.1. Manipulation checks

Participants reported no technical problems. Ostracized participants felt significantly more ignored and excluded, and thought that the others did not like their description ( $M = 3.64$ ,  $SD = 1.29$ ,  $n = 45$ ) compared to included people ( $M = 1.73$ ,  $SD = 0.70$ ,  $n = 40$ ), Welch's  $t(69.35) = 8.62$ ,  $p < 0.001$ ,  $d = 1.89$ . Participants in the ingroup condition ( $M = 3.50$ ,  $SD = 1.61$ ,  $n = 42$ ) did not rate the other profiles significantly more similar to them than participants in the outgroup condition ( $M = 3.60$ ,  $SD = 1.50$ ,  $n = 43$ ),  $t(83) = 0.31$ ,  $p = 0.757$ ,  $d = 0.07$ . Thus, whereas the ostracism manipulation worked well, the group membership did not and was not included in further analyses (consequently, we could not investigate RQ1).

### 4.5.2. Effects of ostracism and coping strategies on need satisfaction and well-being

To test H1a and H1b and answer RQ2, we ran a repeated measures MANCOVA (controlling for trait self-esteem). See Table 3 and Fig. 1 for details.

First, the repeated measures MANCOVA (controlled for trait self-esteem) showed a strong and significant multivariate between-subjects effect of ostracism, Pillai-Trace  $V = 0.21$ ,  $F(6, 70) = 3.09$ ,  $p = 0.01$ ,  $f = 0.51$ , but no significant coping effects,  $V = 0.03$ ,  $F(6, 70) = 0.30$ ,  $p = 0.936$ ,  $f = 0.16$ , or interaction effects,  $V = 0.10$ ,  $F(6, 70) = 1.27$ ,  $p = 0.282$ ,  $f = 0.33$ . Replicating results from Study 1, we found strong univariate main effects of ostracism on belonging, self-esteem, meaningful existence, and emotional well-being at  $t_1$  (in Fig. 1 asterisks indicate  $p < 0.05$  and effect sizes  $f$  are reported), but no effects on control and psychological well-being. In addition, there is a strong and significant multivariate effect across the interaction between ostracism and time point,  $V = 0.28$ ,  $F(6, 70) = 4.44$ ,  $p = 0.001$ ,  $f = 0.62$ .

The analysis also showed that the covariate trait self-esteem was significantly strongly related to the multivariate outcome between-subjects,  $V = 0.64$ ,  $F(6, 70) = 20.33$ ,  $p < 0.001$ ,  $f = 1.32$ , and the multivariate effect across the interaction between trait self-esteem and time point was also strong and significant,  $V = 0.17$ ,  $F(6, 70) = 4.44$ ,  $p = 0.040$ ,  $f = 0.45$ .<sup>3</sup>

Second, although neither the coping condition nor the Ostracism  $\times$  Coping interaction significantly altered the needs and well-being, the estimated means in Table 3 indicate that Facebook use after exclusion led to higher mean scores of need restoration than reading a text (the darker dotted bar compared to the heavily striped bar in Fig. 1). Interestingly, the reverse seems to be the case for the inclusion condition. However, all these differences were not significant.

## 4.6. Discussion

One goal of Study 2 was to replicate the findings of Study 1 concerning the effects of social exclusion via Ostracism Online on need satisfaction and emotional states. Again, we found the same pattern of results as in Study 1. First, ostracized individuals reported lower levels of belongingness, self-esteem, and meaningful existence, but did not perceive a loss of control. Second, ostracism in a

<sup>1</sup> Even though it is possible that people's foreign ethnic background interfered with the ingroup–outgroup manipulation, we decided to keep these cases because results did not differ when removing them.

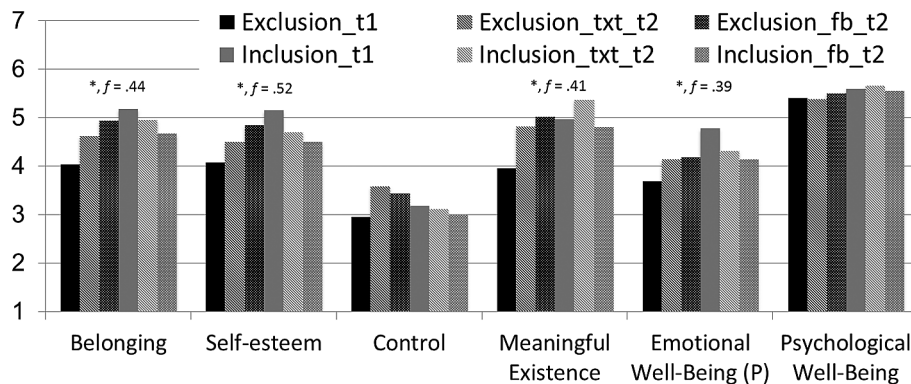
<sup>2</sup> Like in Study 1, by deleting two items of the Control scale,  $\alpha$  was improved up to 0.68 and 0.79 for  $t_1$  and  $t_2$ , respectively. Using the respective mean score did not substantially change any of the results of the following analyses.

<sup>3</sup> In an additional analysis, we included Facebook use as another covariate, but found no significant effects,  $V = 0.10$ ,  $F(6, 69) = 1.22$ ,  $p = 0.309$ ,  $f = 0.33$ .

**Table 3**  
Estimated means and standard errors of needs and well-being (repeated measures MANCOVA, Study 2).

	t1				t2							
	Exclusion (n = 41)		Inclusion (n = 39)		Exclusion				Inclusion			
					Text (n = 24)		FB use (n = 17)		Text (n = 16)		FB use (n = 23)	
	M	SE	M	SE	M	SE	M	SE	M	SE	M	SE
Belonging	4.04	0.17	5.19	0.17	4.62	0.21	4.95	0.25	4.96	0.26	4.68	0.22
Self-esteem	4.08	0.15	5.16	0.16	4.51	0.19	4.85	0.23	4.71	0.24	4.51	0.20
Meaningful existence	3.96	0.15	4.97	0.16	4.82	0.18	5.03	0.22	5.37	0.22	4.81	0.19
Control	2.96	0.15	3.19	0.15	3.58	0.23	3.44	0.28	3.12	0.29	3.00	0.24
Emotional well-being	3.69	0.18	4.78	0.19	4.14	0.23	4.18	0.27	4.32	0.28	4.14	0.23
Psychological well-being	5.41	0.10	5.60	0.10	5.39	0.12	5.51	0.14	5.57	0.14	5.56	0.12

Note. N = 80 due to listwise missing values. All estimated means are controlled for the effects of trait self-esteem. For the sake of brevity, coping groups(text vs. Facebook use) are not displayed at t1, because manipulation occurred after t1.



**Fig. 1.** The repeated measures MANCOVA (controlled for trait self-esteem) shows univariate main effects of ostracism at t1 as indicated by asterisks ( $p < 0.05$ ) and effect sizes  $f$ , but no effects of coping, or interactions. See text for details and Table 3 for means and standard deviations.

social media based environment negatively affected emotional well-being, which amplifies the range of aversive effects induced by ostracism and highlights the importance of considering well-being for future investigations. In contrast, psychological well-being seems to be a rather stable construct that is not likely to change due to the experience of one brief episode of ostracism (e.g., Houben, van den Noortgate, & Kuppens, 2015).

Furthermore, our attempt to manipulate participants' perceived similarity with ingroup versus outgroup members was not successful, suggesting that students with different subjects and ethnic backgrounds were still seen as members of the ingroup. One possible reason could be that the ingroup was not made salient to the participants and thus the presented outgroup features bared no relevance. Future studies should thus try to implement outgroups that deviate more strongly from ingroup members (e.g., focusing more strongly on visual cues than on profile descriptions), while considering that the outgroup has to be a salient group category within the environment of a SNS and the Ostracism Online tool.

Regarding the examined coping conditions, we found that Facebook use after being excluded did lead to slightly higher need restoration compared to reading a text, suggesting that social media might actually offer ways through which excluded individuals might restore their specific need-threats. However, due to the non-significant effects, these small differences should not be interpreted. Future studies should apply more well-powered designs in order to validly measure the effectiveness of Facebook use as a coping strategy following social exclusion. Furthermore, future investigations might also examine which Facebook features are better at restoring certain needs and whether there is a differential use of those features between excluded and included individuals.

### 5. General discussion

What can we learn from our two studies? Like previous studies (Gerber & Wheeler, 2009; Hartgerink et al., 2015), we found that feeling excluded can threaten needs (i.e., belonging, self-esteem, and meaningful existence) and affective states (i.e., mood and emotional well-being). Thus, we conclude that the Ostracism Online tool is an ecologically valid paradigm to induce ostracism in a social media environment and it seems to be a useful alternative to common and well-known paradigms such as Cyberball.

However, in contrast to previous studies, we found no support that control was threatened. This might be due to a low consistency of the German version of the control scale but there is evidence that this was not the case. One the one hand, Cronbach's  $\alpha$  in Study 2 at t2 was in line with findings by Wolf et al. (2015). Furthermore, we also conducted additional analyses with an optimized scale in Study 1 and Study 2, but this did not change the results of any of the analyses in a substantial way. On the other hand, a more plausible explanation could be that—unlike Cyberball—the Ostracism Online tool provides features to immediately restore control. For example, if users receive no Likes they might enforce to like other profiles as a direct compensation or as an attempt to stimulate responses in turn. Moreover, they might also refrain from liking other profiles to punish the others for not liking them. As they cannot restore control in the Cyberball game because there is no opportunity to toss a ball if they do not receive one, the Like feature in the Ostracism Online tool enables individuals to control their actions after being excluded by deliberately liking or not liking other profiles. However, Wolf et al. (2015) found an effect of ostracism on control and the settings in our studies were very similar to theirs. Thus, further optimizations of the German scale and replications within the

Ostracism Online tool are warranted.

Based on theoretical assumptions and empirical findings, restoring thwarted needs might be facilitated by social media use (e.g., Grieve et al., 2013; große Deters & Mehl, 2013; Knäusenberger et al., 2015). However, in the present research, these effects were nonsignificant. To investigate this question more deeply in future, we need well-powered studies with innovative designs and manipulations. This could be accomplished by (a) focusing rather on selective Facebook exposure (e.g., participants could freely choose to use Facebook during a phase of Internet browsing) than on forced exposure (as in the coping condition in Study 2), (b) capturing Facebook (feature) use more precisely via tracking software instead of self-reports, or (c) using the Ostracism Online tool to its full advantage by manipulating tiny but maybe important details (e.g., displaying a “read” instead of a “Like”-Button) as proposed by Wolf et al. (2015).

Last, from a self-affirmation perspective (e.g., Toma & Hancock, 2013) using the Ostracism Online tool to investigate social media as a source of need-threat and as a source of need-restoration at the same time might be theoretically flawed. For example, self-affirmation theory (Steele, 1988) suggests that self-worth could be restored or boosted in social media only if it has been diminished in a distinct domain (e.g., feedback from an SNS-unrelated domain such as academic exams). This might explain our findings—although other social psychological theories would argue conversely (see Toma & Hancock, 2013, p. 327, for a discussion of several theories that would assume that the self-threat would be restored in the same domain; e.g., to reduce cognitive dissonance). It seems to be a worthwhile endeavor to enrich theoretical assumptions about specific need fortifications by reconsidering different social psychological theories in light of the social media environment.

## 6. Conclusion

In times of being permanently online, permanently connected (Vorderer et al., 2016), social media use seems to be ubiquitous: We seek affiliation with others on SNS almost constantly, whereas, at the same time, the chances increase that our social media activities go unnoticed, messages are not immediately answered, or status updates receive no likes from our virtual friends. These minimal signals of online ostracism are easily detected, cause social pain, worsen our mood, and threaten our fundamental human needs. We should therefore carefully examine the detrimental effects of social media on well-being and appropriate coping strategies for need restoration. The Ostracism Online tool might provide a useful framework for this endeavor.

## Role of the funding source

This research did not receive any specific grant from funding agencies in the public, commercial, or not-for-profit sectors.

## Acknowledgment

This article is dedicated to the memory of Britta Zwillich. The authors would like to thank the participants of the BA seminar “Cyberostracism” (U Mannheim, spring term 2014), who helped to collect the data for Study 1. We thank the anonymous reviewers for their helpful comments on previous versions of the present article.

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