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Is Receiving Dislikes in Social Media Still Better than Being Ignored?

The Effects of Ostracism and Rejection on Need Threat
and Coping Responses Online

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Abstract

When posting content in social media, users can feel excluded due to lacking (cyber-ostracism) or negative (cyber-rejection) feedback. Referring to the temporal need-threat model, this study examined the impact that both exclusion experiences have on social media users' need threat and on their online coping behavior to fortify threatened needs. For this purpose, a pre-registered between-subjects experiment ($N = 211$) was conducted by manipulating the type of social exclusion on three levels (ostracism; rejection; inclusion). Results indicated that both types of exclusion threatened media users' needs for belonging, self-esteem, meaningful existence, and control. Compared to ostracized users, rejected ones were more threatened in their needs for belonging and self-esteem, but equally threatened in their needs for meaningful existence and control. Regarding social media users' coping behavior, ostracized users showed more prosocial behavior, whereas rejected ones rather withdrew from social interactions. Material, code, and data can be found at <https://osf.io/3daxq/>.

Keywords: ostracism, rejection, social media, need threat, coping behavior

In times of permanent availability and connectedness (Vorderer, Hefner, Reinecke, & Klimmt, 2018), individuals can stay in contact whenever they want to and even when being physically separated. By posting content (e.g., pictures or status updates) in social media, it is possible to constantly update one's peer group on the latest events happening in life. As the "currency of social media" (Carr, Hayes, & Sumner, 2018), users can respond to these updates by distributing Likes and Upvotes. On Facebook, which is currently the most often used social media site, a user posts on average 35 status updates and assigns 145 Likes per month (Mavrck, 2019). Hayes, Carr, and Wohn (2016) conceptualized these one-click tools as "paralinguistic digital affordances" (PDAs) that facilitate communication without a specific language. These affordances are a common way of interaction in social media. They can maintain interpersonal relationships, and thus have a high relevance for media users: Receiving Likes is perceived as socially supportive (Carr, Wohn, & Hayes, 2016; Seo, Kim, & Yang, 2016), indicates the success of a post (Carr et al., 2018), and results in emotional gratifications such as feelings of happiness or self-worth (Hayes et al., 2016). In contrast, a lack of Likes can result in feelings of social exclusion (Hayes, Wesselmann, & Carr, 2018), threatens fundamental needs for belonging, self-esteem, control, and meaningful existence (e.g., Tobin, McDermott, & French, 2018), and impairs emotional well-being (Schneider et al., 2017).

However, research has rarely considered that paralinguistic digital affordances can also be negative in tone: Nowadays, many social media sites provide the opportunity to express negative reactions, for instance, through Dislike (e.g., YouTube) or Downvote (e.g., Reddit, Jodel) buttons. Social exclusion can therefore not only occur through the absence of positive feedback via paralinguistic digital affordances (Likes/Upvotes), but also when receiving negative feedback via paralinguistic digital affordances (Dislikes/Downvotes). From a theoretical point of view, these experiences are two different forms of social exclusion: Whereas ostracism-based experiences are characterized as being ignored and getting no

attention at all, rejection-based experiences include direct negative attention and explicit signals of being unwanted (Williams, 2009). Following this conceptional differentiation, the absence of reactions to a posted content evokes feelings of cyber-ostracism, whereas receiving negative ones may represent an episode of cyber-rejection. Although previous research has often used these terms interchangeably, Wesselmann and Williams (2017) pointed out that a distinction between both exclusion experiences is necessary because they have conceptual nuances that can result in different psychological outcomes. So far, this distinction has not been made in the context of social media. As negative paralinguistic digital affordances are underexplored feedback cues, the impact of cyber-rejection on media users' need threat remains unclear.

Another research gap concerns the behavioral responses that excluded media users show to fortify their threatened needs. Empirical evidence has shown that the type of social exclusion affected whether individuals withdraw from social interactions or behaved in a prosocial or antisocial way (e.g., Molden, Lucas, Gardner, Dean, & Knowles, 2009). As most research on behavioral consequences was performed in laboratory settings, the effect of social exclusion on users' interaction behavior in social media remains unclear. Building on these research gaps, the aim of this study is to examine the impact of both types of social exclusion—ostracism (due to a lack of feedback) and rejection (through receiving negative feedback)—on social media users' need threat and online coping behavior. Thus, this paper addresses two research problems: (1) How can different types of social exclusion online threaten social media users' fundamental needs for belonging, self-esteem, control, and meaningful existence? (2) How does the type of social exclusion online affect the coping behavior of media users, who are threatened in their needs, towards other users?

Theoretical Background

Temporal Need-Threat Model

The two research problems mentioned above draw on the temporal need-threat model (Williams, 2009) which divides the consequences of social exclusion into different phases: In the reflexive phase, even the slightest signals of social exclusion lead to immediate feelings of social pain, which overshadow rational thoughts and threaten fundamental needs for belonging, self-esteem, meaningful existence, and control. These negative psychological consequences even occur when individuals are excluded by an outgroup (Wirth & Williams, 2009) or a despised group (i.e., the Ku-Klux-Klan; Gonsalkorale & Williams, 2007), when being included in a group entails financial losses (van Beest & Williams, 2006), when individuals are informed that the exclusion is based on preprogrammed scripts (Zadro, Williams, & Richardson, 2004), and when they are socially excluded from a situation in which their chosen avatar could die (van Beest, Williams, & van Dijk, 2011). In the reflective phase, excluded individuals cognitively process their experience and actively decide which actions need to be taken to re-establish needs. Thus, the first research problem covers the psychological consequences within the reflexive phase, whereas the second one deals with individuals' behavioral responses in the reflective stage to fortify needs threatened by either ostracism or rejection.

Different Forms of Social Exclusion

The terms social exclusion, ostracism, and rejection have often been used synonymously to express any type of threat to individuals' inclusionary status. As already mentioned, this paper conceptualizes these constructs as psychologically distinct by categorizing social exclusion experiences in two subcategories: ostracism- and rejection-based experiences (Wesselmann & Williams, 2017).

Ostracism refers to situations of being ignored and not getting any attention at all (Williams, 2009). Molden et al. (2009) used the term “passive exclusion” to highlight that this experience is based on passive behaviors such as withholding eye contact. Such forms of passive exclusion have already been transferred to the online context (cyber-ostracism; Williams, Cheung, & Choi, 2000). We therefore understand reactions to a posted content as an episode of cyber-ostracism.

In contrast, rejected individuals receive direct negative attention and explicit signals of being unwanted (Wesselmann & Williams, 2017). In these cases, threats to individuals’ inclusionary status are directly communicated, based on active behaviors (e.g., verbal disputes), and therefore labeled as experiences of active exclusion (Molden et al., 2009). Receiving Downvotes and Dislikes on a posted content can be interpreted as such a type of direct negative attention. However, the concept of rejection has mostly been studied in laboratory settings and has not yet been transferred to online contexts. Thus, this paper conceptualizes active exclusion over the internet through receiving negative reactions to a posted content as an episode of cyber-rejection.

Effects of Social Exclusion on Need Threat

The most frequent comparison made in research on social exclusion is between being included and being ostracized. More than 200 published experiments (for an overview, see: <https://bit.ly/2IrAFxC>) drew this comparison using Cyberball—a virtual tossing game with two computer-generated “players,” where participants either are excluded from the activity after one or two initial tosses or receive the ball an equal share of the throws (Williams & Jarvis, 2006). These studies have shown that social exclusion in terms of ostracism threatens fundamental needs for belonging, self-esteem, control, and meaningful existence (for a meta-analysis, see van Beest, Wicherts, & Williams, 2015). Although this is a traditionally social psychological phenomenon, it has often been transferred to the media context. For example,

feelings of social exclusion (e.g., greater pain, poorer mood, and threats to fundamental needs) can arise in computer-mediated communication (CMC) when media users receive no or only a small number of messages from their chat partners (Donate et al., 2017; Smith & Williams, 2004). Furthermore, Gonzales and Wu (2016) found that social media users who checked their smartphone in the presence of others were perceived as ostracizing. According to Hayes et al. (2018), social media users perceived feelings of ostracism when they did not receive Likes from their strong ties. Moreover, experimental evidence showed that the absence of Likes on a status update threatened fundamental needs (e.g., Reich, Schneider, & Heling, 2018; Tobin, Vanman, Verreynne, & Saeri, 2015; Tobin et al., 2018), and negatively affected emotional well-being (Schneider et al., 2017). Even the imagination of getting no reactions to posted comments was found to threaten fundamental needs (Smith, Morgan, & Monks, 2017).

Rejection-based exclusion experiences have also been associated with threatened needs for belonging, meaningful existence, and control (Zadro, Williams, & Richardson, 2005). Correlational data have shown that media users' self-esteem was not affected by the frequency of reactions to a post, but rather by the tone of these reactions in such a way that negative feedback decreased self-esteem (Valkenburg, Peter, & Schouten, 2006). However, negative feedback in social media has not yet been studied experimentally. Only some studies in laboratory settings compared being rejected and being included (e.g., Moor, Crone, & van der Molen, 2010). These experiments have shown that rejection can elicit negative emotions such as anger and sadness (Buckley, Winkel, Leary, 2004), reduce self-esteem (e.g., Leary et al., 2003), impair mood (Nezlek et al., 1997), and can lead to the perception that life is meaningless (Twenge, Catanese, & Baumeister, 2003). Transferred to social media, it can be expected that both forms of social exclusion—being cyber-rejected through receiving negative feedback via paralinguistic digital affordances and feeling cyber-ostracized due to a lack of feedback—threaten fundamental needs. Therefore, the following can be assumed:

H1 Compared to receiving positive feedback via PDAs, lacking responses to a status update and negative feedback via PDAs threaten media users' needs for a) belonging, b) self-esteem, c) meaningful existence, and d) control.

Whereas H1 treated both types of social exclusion online equally (i.e., as threatening four fundamental needs), theoretical and empirical findings revealed that the effects of these types can differ. Although little research compared the effects of being ostracized and being rejected directly, experimental evidence showed that targets of ostracism reported a stronger threat of all four needs than targets of rejection (Zadro et al., 2005). This can be explained using the minimal acknowledgement hypothesis which postulates that individuals' fundamental needs are highly reactive to any kind of acknowledgement—even negative in tone—as it implies that one's existence is recognized by others (Rudert, Hales, Greifeneder, & Williams, 2017). Whereas ostracism indicates that one is unworthy of others' attention, rejection entails at least a relational dynamic between the target and the source of social exclusion (O'Reilly, Robinson, Berdahl, & Banki, 2015). As rejected individuals still receive attention, they can respond to the sources' accusations, which should contribute to the satisfaction of their fundamental needs. In contrast, such attempts by targets of ostracism may be unnoticed and therefore not able to satisfy needs (Zadro et al., 2005). Likewise, following the responsive theory of social exclusion (Freedman, Williams, & Beer, 2016), individuals' emotional reactions to social exclusion highly depend on whether the sources of exclusion are responsive towards them or not. Whereas ostracism is characterized by a lacking responsiveness, being rejected reflects at least some form of social response and can maintain fundamental needs. To our best knowledge, the comparison between rejection and ostracism has not yet been made in the context of social media. Referring to the minimal acknowledgement hypothesis, the lack of social attention when receiving no feedback to a posted content should send even stronger signals than receiving negative reactions. Moreover,

receiving negative reactions indicates some form of responsiveness and can thus maintain individuals' needs (Freedman et al., 2016). Thus, the following is postulated:

H2 Lacking reactions to a status update lead to a stronger threat of the needs for a) belonging, b) self-esteem, c) meaningful existence, and d) control than receiving negative feedback via PDAs.

Effects of Social Exclusion on Coping Behavior

According to Williams (2009), excluded individuals behave in ways to re-establish an optimal level of their fundamental needs: Social exclusion can induce both prosocial behaviors to improve one's inclusionary status (i.e., moving toward), and antisocial behaviors like aggression (i.e., moving against). These behaviors involve either a positive or a negative interaction between the excluded individuals and their counterpart. Ren et al. (2016) recently added a moving away response (e.g., withdrawal from social interactions) that can serve as a self-protective mechanism to avoid future exclusion experiences. This behavior reflects a lacking interest to participate in a social exchange and thus represents a non-social form of coping. To date, it has not yet been fully clarified under which circumstances excluded individuals are more likely to move toward, against or away. The type of coping behavior chosen depends on personality, cognitive, and situational factors (Williams, 2009). Among these, the moderating influence of situational factors—such as the type of exclusion—is mostly unexplored. Instead of comparing both forms directly, existing research has compared the behavioral responses of either ostracism and inclusion (e.g., Meagher & Marsh, 2017; Poon & Wong, 2019) or rejection and inclusion (e.g., Gaertner, Iuzzini, & O'Mara, 2008; Kerr et al., 2009).

Although both types of social exclusion have been associated with all three behavioral responses when considered separately, it seems plausible that, in direct comparison, they lead to different coping behaviors. Molden et al. (2009) explained this through the unique type of

signals sent by each of these experiences: The predominant signal when being ostracized is the clear absence of positive feedback. Therefore, individuals are highly motivated to attract positive attention. This leads to promotion-focused responses (Higgins, 1997), which are generally associated with a strong desire to achieve positive outcomes (here: attracting positive attention; Molden, Lee, & Higgins, 2008). In contrast, being rejected signals a clear presence of negative feedback which provokes general motivations for safety and security—so-called prevention-focused motivations (Higgins, 1997). These result in more cautious and passive behaviors to maximally protect the self from future exclusion (Ayduk, May, Downey, & Higgins, 2003). Following this line of research, ostracized individuals rather behave in a prosocial way to re-establish social contact, whereas rejected individuals rather seek solitude instead of risking the possibility of receiving negative feedback again. However, as the research on behavioral consequences was mostly performed in the offline context, the effects on online coping behavior remain unclear. Thus, the present study provides an initial step to understand these effects by transferring the above-mentioned findings to the context of social media as follows:

- H3** Users who receive no reactions to their status update will respond with more prosocial behavior towards other users than those who receive negative feedback via PDAs.
- H4** Users who receive negative feedback via PDAs on their status update will rather withdraw from social interactions with other users than those who receive no reactions.

To our best knowledge, no study directly compared both types of social exclusion regarding antisocial behavior. According to Richman and Leary (2009), antisocial responses dominate when the probability of regaining relational value is perceived as low (i.e., when individuals consider their social bonds as irrevocably broken). However, it is unclear whether cyber-ostracism or cyber-rejection is associated with a higher probability of regaining relational value. Therefore, the following research question is formulated:

RQ Which influence does the type of social exclusion have on the extent to which social media users behave in an antisocial way towards other users?

Method

All data and material referred to in this section are available in the Open Science Framework (OSF, see: <https://osf.io/3daxq/>). We registered this project on 23rd June 2019 using the website www.aspredicted.org (see file “pre-registration” on OSF).

Design and Manipulation

To test our assumptions, we conducted a between-subjects experiment in which the independent variable—type of social exclusion—was manipulated on three levels (ostracism; rejection; inclusion). For this purpose, the Ostracism Online Tool (Wolf et al., 2015) was adapted to fit the research interests. In this tool, participants believe to interact with 11—in fact computer-generated—“users” in a social media environment. They are supposed to create a personal profile consisting of a nickname, an avatar and a short profile description. Afterwards, they are redirected to an “introduction round” where all personal profiles are displayed. On this page, they can spend three minutes assigning feedback via paralinguistic digital affordances to the other users. Conversely, they also receive feedback on their own profile description.

The rejected participants received six Dislikes (“thumbs down”) but no Likes (“thumbs up”), whereas the included ones received six Likes but no Dislikes. This particular number was chosen so that they got either negative or positive attention from more than half of the other users. In the ostracism condition, their profile description received one Like and one Dislike at the very beginning of the introduction round. Although ostracism is defined as not receiving any attention at all, it should be avoided that participants attribute a lack of responses to a technical error. Importantly, participants received the same number of Likes and Dislikes to be neither positively nor negatively rated on average. This minimal attention in the first ten seconds of the introduction round is in line with the initial throws that participants receive in

traditional ball tossing paradigms (e.g., Williams & Jarvis, 2006; Williams & Sommer, 1997). Previous studies using the Ostracism Online Tool also referred to these paradigms and showed that even feedback in terms of few Likes can cause feelings of ostracism (Schneider et al., 2017; Wolf et al., 2015). As the success of this manipulation was supported in a pretest (see file “pretest” on OSF), this stimulus material was used without further modifications within the main study. A video simulation of all three conditions (see folder “material”) as well as additional information and an English translation (see file “stimulus material”) are available on OSF.

Participants

Sample size rationale. Based on several power analyses (given a statistical power $1-\beta = .95$, a significance level $\alpha = .05$, and effect sizes between $d = 0.69$ and 1.21 ; see file “power analyses” on OSF), our planned total N was ≥ 135 participants (i.e., each group ≥ 45). To provide a buffer for data cleaning, we intended to close the survey after $N = 220$.

Data collection. As the target population were social media users, this survey was distributed via Facebook and YouTube, which are the social media platforms with the highest number of active users in Germany (We Are Social, & Hootsuite, & DataReportal, 2019). The link was posted in Facebook groups with members from different geographical regions and communicated by a YouTuber (more than one million subscribers) to a large and more diverse audience (in terms of age, educational level, and occupational status). Contrary to the pre-registered statement, data collection stopped after having reached 710 fully completed questionnaires. This can be explained by the fact that the required total $N \geq 135$ had not yet been reached after cleaning the originally intended sample of 220 participants. Therefore, a larger buffer than specified in the pre-registration had to be provided for data cleaning.

Data cleaning. Participants were excluded from the analysis if they had technical difficulties while using the Ostracism Online Tool, reported to already know this tool, did not

show a satisfying level of engagement in the study (i.e., incorrectly answered at least one of the four attention checks), or identified the study's aim.¹ Moreover, two independent coders removed participants who have not taken the task seriously and written a "nonsense" profile description. A comprehensive overview of all steps of data cleaning (including the respective coding instructions) can be found in the OSF file "data cleaning."

Sample description. The process of data cleaning resulted in a final sample of $N = 211$ ($n_{\text{ostracism}} = 71$, $n_{\text{rejection}} = 64$, $n_{\text{inclusion}} = 76$) which consisted of 63% male ($n = 132$) and 37% female ($n = 78$) participants and covered a broad age spectrum from 14 to 64 years ($M = 22.16$, $SD = 7.45$). Most of the participants were school (24.6%) or university students (39.3%), followed by employees (12.8%), and vocational trainees (10.9%). On average, they used 3.48 ($SD = 1.62$) different social media platforms in their everyday lives. Among these, YouTube (89.6%), Instagram (65.9%), Facebook (46.9%), and Snapchat (36%) were the most often mentioned platforms. Approximately one fifth of the sample was familiar with negative feedback cues not only through YouTube, but also through Jodel (21.8%) and Reddit (20.9%). However, in their everyday social media use, participants were more familiar with receiving/assigning positive than with receiving/assigning negative feedback.

Procedure

Data were collected using an online survey (see file "questionnaire" on OSF) in July 2019. After entering the welcome page, participants signed a consent form that was in line with the General Data Protection Regulation. Next, they were randomly assigned to one of the three experimental conditions using the Ostracism Online Tool. Subsequently, manipulation checks and the measure of need threat followed. Then, participants were exposed to four status

¹ Excluding these participants was necessary as this study covers the first two phases of Williams' (2009) temporal need-threat model. As the reflective reactions to social exclusion (= Research Problem 2) strongly depend on situational factors (e.g., doubting the authenticity of the exclusion experience), this procedure should prevent confounding effects. However, additional analyses including these participants (see file "output main study_N = 349") and an overview of their similarities with/differences to the results reported in this paper (see file "results depending on sample size") can be found in OSF.

updates to measure the three behavioral responses. On the following pages, control variables as well as media-related and socio-demographic variables were collected. The next page contained a suspicion check as well as the possibility of expressing interest in receiving information about the research outcomes. The survey ended with a debriefing in which the participants were informed that the received feedback was fictitious and not from human users.

Measures

Manipulation check. To check the success of the manipulation (ostracism; rejection; inclusion), we used two different approaches: Firstly, participants responded to a single item addressing the nature of the feedback (“The feedback I received on my profile description in terms of Likes and Dislikes was ...”) on a bipolar scale from -3 (*very negative*) to $+3$ (*very positive*). Secondly, we measured the *perceived* type of social exclusion to establish a connection between the nature of the feedback and participants’ emotional reaction to this feedback. Thus, participants responded to two items highlighting the conceptual differences between both types (perceived ostracism: “I felt ignored”/perceived rejection: “I felt actively rejected”) on a 5-point scale ranging from 1 (*strongly disagree*) to 5 (*strongly agree*).

Need threat. The Need-Threat Scale (van Beest & Williams, 2006) was used to measure the extent to which participants’ needs for belonging ($\alpha = .84$; e.g., “I felt I belonged to the group”), self-esteem ($\alpha = .88$; e.g., “I felt good about myself”), meaningful existence ($\alpha = .77$; e.g., “I felt important”), and control ($\alpha = .61$; e.g., “I felt powerful”) were threatened. Participants responded to these 20 items—whose formulation Wolf et al. (2015) adapted to fit the context of the Ostracism Online Tool—on a 5-point scale ranging from 1 (*strongly disagree*) to 5 (*strongly agree*), with low values indicating a strong need threat. To test for factorial validity, we ran confirmatory factor analyses (CFA), using the R 3.6.1 and package *lavaan* (Ver. 0.65, Rosseel, 2012) with robust maximum-likelihood estimation. A Likelihood-ratio test indicated that the four-factor model was superior to the one-factor model, $\chi^2_6 = 81.21$,

$p < .001$. However, as model fit of the four-factorial model was rather mediocre, Satorra–Bentler corrected (SB) $\chi^2_{129} = 323.59$, $p < .001$, SB $\chi^2/df = 2.51$, robust CFI = .899, SRMR = .062, robust RMSEA = .085, 90% of robust RMSEA [.074, .096], we also report results for a unidimensional short scale of four items, which were selected in an iterative process, SB $\chi^2_2 = 0.23$, $p < .001$, SB $\chi^2/df = 0.11$, robust CFI = 1.00, SRMR = .007, robust RMSEA = .00, 90% of robust RMSEA [.000, .032] (for details, see files “cfa” on OSF).

Prosocial online behavior. According to Sumner, Rudge-Jones, and Alcorn (2018), a substantial portion of liking behavior is rather relational- than content-based, meaning that Likes transport prosocial messages such as “I care about you.” Thus, prosocial behavior was measured by how many other users the participants liked. We applied this measurement after the Ostracism Online Tool when participants experienced the full extent of in-/exclusion. Therefore, they subsequently read four status updates to which they could react by using either the Like or the Dislike button (see file “questionnaire” on OSF, pp. 6–7). The more posts they liked, the higher was their prosocial online behavior, rated on a 5-point scale from 0 (*liking no post*) to 4 (*liking all posts*).

Antisocial online behavior. As the participants could also react to the status updates using a Dislike button, antisocial behavior was measured on a 5-point scale ranging from 0 (*disliking no post*) to 4 (*disliking all posts*). Consequently, higher values indicate a stronger degree of antisocial online behavior.

Familiarity status. The four status updates used to measure pro- and antisocial online behavior were posted from users with varying familiarity status (two users already known from the Ostracism Online Tool and two so far unknown users). This distinction was made to exploratively analyze whether the participants directed their pro-/ antisocial online behavior only towards those who had previously excluded them, or whether it manifested in a general behavioral tendency (see file “additional analyses” on OSF).

Withdrawal from social interactions. In social media, sending friend requests to other users indicates an interest in forming interpersonal contacts or initiating further interactions. Thus, the participants were asked whether they want to send a friend request to the four users who posted the above-mentioned status updates. To ensure that they interpreted the question as intended, friend requests were described as a means of contacting the four users in the future. Therefore, we interpreted the lack of interest in sending these requests as an indicator for seeking solitude. Their decisions resulted in an index ranging from 0 (*sending no user a friend request*) to 4 (*sending all users a friend request*). We recoded this index so that higher values represent a greater preference for withdrawal from social interactions.

Additional variables. We also collected some additional variables, including (1) different control variables to guarantee the quality of data, (2) socio-demographic variables, (3) media-related variables to obtain information about participants' everyday media usage behavior, and (4) variables related to the Ostracism Online Tool to record participants' behavior within the tool (for an overview of all variables, see file "codebook" on OSF).

Results

Data were analyzed using the statistics software R (for additional information, see files "dataset," "syntax," and "output main study_N = 211" on OSF).

Manipulation Check (Type of Social Exclusion)

Supporting the success of our manipulation, an *ANOVA* indicated that the nature of feedback significantly varied depending on the experimental condition, Welch's $F(2, 133.26) = 2953.38, p < .001, \eta_p^2 = 0.98$. Planned contrasts revealed that the directions of these differences were in line with expectations: Compared to the ostracism condition ($M = -0.14, SD = 0.59$), the included participants ($M = 2.70, SD = 0.54$) chose significantly more positive values to describe their received feedback, Welch's $t(141.50) = -30.23, p < .001, r = .93$, whereas the rejected ones ($M = -2.92, SD = 0.32$) rated the feedback significantly more

negatively, Welch's $t(110.58) = 34.27, p < .001, r = .96$. In addition, the nature of feedback was associated with different types of social exclusion: the experimental conditions significantly differed with regard to perceived ostracism, Welch's $F(2, 120.81) = 70.48, p < .001, \eta_p^2 = 0.54$, and perceived rejection, Welch's $F(2, 113.15) = 82.57, p < .001, \eta_p^2 = 0.59$. Rejected participants ($M = 3.63, SD = 1.54$) agreed to the rejection-related statement significantly more strongly than ostracized ones ($M = 2.24, SD = 1.13$), Welch's $t(114.60) = -5.92, p < .001, r = .48$. In contrast, ostracized participants ($M = 3.21, SD = 1.21$) showed a significantly stronger agreement with the ostracism-related statement than the rejected ones ($M = 2.22, SD = 1.12$), Welch's $t(132.85) = 4.96, p < .001, r = .40$.

Hypotheses Testing

Effect of social exclusion on need threat (H1 and H2). A MANOVA revealed a significant effect of the form of social exclusion on need threat, $F(8, 410) = 37.03$, Wilk's $\Lambda = 0.34, p < .001, \eta_p^2 = .38$. More specifically, univariate tests showed that the type of social exclusion (ostracism, rejection, inclusion) significantly affected belonging, Welch's $F(2, 132.15) = 145.63, p < .001, \eta_p^2 = .69$, self-esteem, Welch's $F(2, 133.42) = 73.09, p < .001, \eta_p^2 = .52$, meaningful existence, Welch's $F(2, 131.05) = 78.31, p < .001, \eta_p^2 = .54$, and control, $F(2, 208) = 20.66, p < .001, \eta_p^2 = .17$. Analysis with the optimized single score showed similar results (see "output main study_N = 211" on OSF).

Afterwards, planned contrasts for each of the dependent variables were analyzed (see Figure 1 for group-specific M s and 95% CIs): H1a–d assumed that both types of social exclusion threaten media users' needs for belonging, self-esteem, meaningful existence, and control. To test this assumption, the inclusion condition (contrast coefficient: 1) was contrasted with the ostracism (contrast coefficient: -0.5) and the rejection (contrast coefficient: -0.5) conditions. Supporting H1a–d, there were significant differences between experimental conditions in belonging, Welch's $t(179.41) = -17.04, p < .001, r = .79$, self-esteem, Welch's

$t(171.50) = -12.11, p < .001, r = .68$, meaningful existence, Welch's $t(193.35) = -12.52, p < .001, r = .67$, and control, $t(208) = -6.43, p < .001, r = .40$.

In H2a–d, it was postulated that being ostracized leads to a stronger need threat than being rejected. To test this assumption, both types of social exclusion—the ostracism (contrast coefficient: 1) and the rejection (contrast coefficient: –1) conditions—were directly compared. Results indicated a significant difference between conditions only for belonging, Welch's $t(122.66) = 4.35, p < .001, r = .37$, and self-esteem, Welch's $t(122.09) = 2.50, p = .014, r = .22$, but not for meaningful existence, Welch's $t(132.92) = -1.16, p = .249$, and control, $t(208) = 1.24, p = .218$. However, as the needs for belonging and self-esteem were more threatened in the rejection ($M_{\text{belonging}} = 2.04, SD_{\text{belonging}} = 0.81; M_{\text{self-esteem}} = 2.27, SD_{\text{self-esteem}} = 0.94$) than in the ostracism condition ($M_{\text{belonging}} = 2.60, SD_{\text{belonging}} = 0.67; M_{\text{self-esteem}} = 2.64, SD_{\text{self-esteem}} = 0.78$), H2a–d are rejected.

Effect of social exclusion on behavioral online responses (H3, H4, and RQ). To answer the second research problem, three separate ANOVAs were conducted, each with the type of social exclusion (ostracism, rejection, inclusion) as independent and the respective behavioral online response as dependent variables (see Figure 2 for group-specific M s and 95% CIs). The first ANOVA indicated a significant effect of the type of social exclusion on participants' prosocial online behavior, Welch's $F(2, 133.97) = 3.11, p = .048, \eta_p^2 = .04$. In line with H3, ostracized participants liked significantly more status updates from other users ($M = 2.89, SD = 0.96$) than rejected ones ($M = 2.41, SD = 1.26$), Welch's $t(118.04) = 2.48, p = .015, r = .22$. The second ANOVA showed no main effect on withdrawal from social online interactions, $F(2, 208) = 1.41, p = .247, \eta_p^2 = .01$. Thus, contrary to H4, there were no significant differences in the amount of unsent friend requests between the ostracism ($M = 3.24, SD = 0.77$) and the rejection ($M = 3.31, SD = 0.85$) conditions, $t(208) = -0.50, p = .618$. Concerning our RQ about antisocial behavior, the number of Dislikes the participants

assigned to the four status updates did not significantly differ across the experimental conditions ($M_{ostracism} = 0.73$, $SD_{ostracism} = 0.81$, $M_{rejection} = 0.88$, $SD_{rejection} = 1.12$, $M_{inclusion} = 0.74$, $SD_{inclusion} = 0.89$), $F(2, 208) = 0.50$, $p = .609$, $\eta_p^2 = .01$.

Explorative Analysis

A possible explanation for these non-significant findings could be that coping behavior was measured after being exposed to the Ostracism Online Tool. Perhaps participants' (dis)liking behavior towards the four presented status updates was unaffected by the experimental conditions because the participants had already started to fortify their threatened needs during the online session. Therefore, we exploratively analyzed how many of the 11 profile descriptions in the Ostracism Online Tool they liked (prosocial behavior), disliked (antisocial behavior), or neither liked nor disliked (withdrawal behavior; see Figure 3 for group-specific M s and 95% CIs). For pro- and antisocial behavior the same patterns as after the Ostracism Online Tool occurred: Supporting H3, ostracized participants ($M = 7.00$, $SD = 2.22$) liked significantly more profile descriptions than rejected ones ($M = 5.06$, $SD = 2.62$), $t(208) = 4.66$, $p < .001$, $r = .31$. With regard to the RQ, the amount of disliked status updates in the rejection ($M = 2.78$, $SD = 2.47$) and the ostracism ($M = 2.44$, $SD = 1.82$) conditions did not significantly differ, $M_{diff} = 0.35$, 95% CI $[-0.55, 1.24]$, $p = .631$. However, the type of social exclusion had a significant effect on withdrawal from social interactions, Welch's $F(2, 134.20) = 8.11$, $p < .001$, $\eta_p^2 = .11$, with the number of profile descriptions that were neither liked nor disliked being significantly higher in the rejection ($M = 3.16$, $SD = 3.01$) than in the ostracism ($M = 1.56$, $SD = 2.31$) condition, Welch's $t(117.95) = -3.42$, $p = .001$, $r = .30$. Thus, when considering participants' withdrawal online behavior within the Ostracism Online Tool (the number of profile descriptions that were neither liked nor disliked), H4 was supported. Taken together, the responses after and during the Ostracism Online Tool only differed for withdrawal, but not for pro- and antisocial online behavior. Thus, this inconsistency might be

attributed to the different operationalizations of withdrawal behavior (not sending friend requests vs. not reacting to profile descriptions) rather than to the different times of measurement. To test this assumption, we made an additional analysis in which we used the preference of not reacting to profile descriptions after the Ostracism Online Tool as an indicator for withdrawal behavior (see Figure 2 for group-specific means). Using this measurement, rejected participants ($M = 0.72$, $SD = 1.13$) had—in line with H4—a significantly higher degree of withdrawal from social interactions than ostracized ones ($M = 0.38$, $SD = 0.70$), Welch's $t(103.24) = -0.34$, $p = .042$, $r = .20$.

Discussion

The present paper is among the first that offers a pre-registered and well-powered approach to study the effects of cyber-ostracism and cyber-rejection on online coping with a stronger focus on online behavioral than on self-report measures. The main theoretical purpose was to investigate the distinction between ostracism- and rejection-related exclusion experiences (Wesselmann & Williams, 2017) in the context of social media to better understand the different psychological consequences of either lacking or negative feedback on a posted status update. Supporting the underlying assumption, the absence of online responses to a status update induced feelings of cyber-ostracism, whereas receiving negative feedback resulted in feelings of cyber-rejection. This highlights the necessity of treating both experiences as conceptually different forms of social exclusion. Moreover, it indicates that the Ostracism Online Tool is not only a convenient tool to manipulate cyber-ostracism but also cyber-rejection and, thus, to research underexplored feedback cues such as Downvote and Dislike buttons.

Considering the effects of social exclusion on need threat (Research Problem 1), results indicated that being socially excluded threatened media users' needs for belonging, self-esteem, meaningful existence, and control. In line with H1a–d, this need threat occurred for

both forms of social exclusion—feeling ostracized (due to lacking responses to a status update) and feeling rejected (by receiving negative feedback). These results are consistent with previous studies on cyber-ostracism (e.g., Tobin et al., 2018; Wolf et al., 2015) and offline rejection (e.g., Leary et al., 2003).

Contrary to H2a–d, rejected social media users were more threatened in their needs for belonging and self-esteem than ostracized ones. However, the needs for meaningful existence and control were threatened to the same extent for both types of social exclusion. Referring to the minimal acknowledgement hypothesis (Rudert et al., 2017), which was previously supported within the offline context (O'Reilly et al., 2015; Zadro et al., 2005), ostracism leads to a stronger need threat than rejection does. However, when comparing *cyber*-ostracism and *cyber*-rejection in our study, these differences were either not existent (needs for meaningful existence and control) or even in the opposite direction (needs for belonging and self-esteem). Thus, although feeling ostracized and rejected can be induced in the context of social media, this does not—as expected—manifest in different psychological reactions.

Wesselmann and Williams (2011) pointed out that the nature of electronic-based interactions—more precisely, its anonymity and reduced social cues—may affect people's reactions to social exclusion. Therefore, the above-mentioned findings could be explained by the different modalities that are linked to face-to-face (f2f) and computer-mediated communication (Walther, 2010). In the f2f context, threats to individuals' inclusionary status are communicated through many sensory channels (e.g., withholding eye contact, avoiding conversations or body contact). Due to the physical co-presence, the targets of social exclusion are highly aware that their inclusionary status is threatened. This might explain why their sensitivity towards social attention is so intense that any form of attention—even negative in tone—can satisfy their fundamental needs for belonging, self-esteem, meaningful existence, and control (i.e., minimal acknowledgement hypothesis; Rudert et al., 2017). In contrast, social

exclusion episodes that occur in CMC environments are communicated through fewer sensory channels: In the Ostracism Online Tool used within this study, threats to individuals' inclusionary status are only conveyed in terms of feedback via paralinguistic digital affordances. Moreover, the sources of social exclusion are not physically co-present and therefore mostly anonymous (except for an avatar and a nickname). Although being socially excluded in this context threatened fundamental needs, it might be perceived as a "weaker form of social death" than being ostracized in the f2f context. In line with this assumption, Williams et al. (2002) found that cyber-ostracism is less threatening to the needs for self-esteem and control than f2f-ostracism. Thus, it seems plausible that the minimal acknowledgement hypothesis cannot be transferred to online settings. Even though cyber-ostracism makes social media users sensitive towards acknowledgement, they only strive for positive attention (being included) and not for negative one (being rejected). Future research is needed to test this assumption, for example, using a 3 (type of social exclusion: ostracism; rejection; inclusion) $\times$ 2 (setting: offline; online) design.

Another possible explanation why cyber-rejection led to a stronger need threat than cyber-ostracism could be that receiving negative feedback to a posted content is a rarer experience than not receiving any feedback at all. Whereas not all social media sites provide Downvote or Dislike buttons as feedback options (e.g., Instagram or Facebook), getting no reactions to a post can occur on all social media sites and is thus more likely to happen. Although most of the participants used at least one social media site that offers negative feedback cues in their everyday life (i.e., YouTube, Reddit, Jodel), they reported to not often receive negative feedback on their own posted content (see sample description above). Maybe the reflexive reactions in terms of need threat were more strongly when being cyber-rejected than after cyber-ostracism because the negative feedback came unexpectedly and was therefore even harder to process emotionally. Consequently, it would be interesting to replicate this

study using a sample that is familiar with receiving negative feedback (e.g., victims of hate speech or cyberbullying).

With regard to the second research problem, social media users' online coping behavior differed depending on the form of social exclusion: In line with H3, ostracized social media users reacted with more prosocial online behavior than those who were rejected. Consistent with the literature on ostracism in the offline context (e.g., Molden et al., 2009), cyber-ostracism predominantly signaled the absence of positive feedback which led to promotion-focused responses and a general motivation to re-affiliate. Importantly, the tendency to behave prosocially was found for both the liking behavior towards the 11 users of the Ostracism Online Tool and towards the four users presented after the tool. This could indicate that the desire for positive attention is very strong and persists over time.

H4 postulated that users who received negative feedback on their status update should have a stronger desire to withdraw from social online interactions than ostracized ones. In this respect, the findings were inconclusive: When analyzing the withdrawal behavior after the Ostracism Online Tool using the number of unsent friend requests as an indicator for withdrawal behavior, H4 had to be rejected. However, when using the number of profile descriptions that were neither liked nor disliked as an indicator for withdrawal behavior, H4 was supported—concerning both reactions within and after the Ostracism Online Tool. Thus, similar to rejection experiences in the offline context (e.g., Ayduk et al., 2003; Molden et al., 2008), cyber-rejection predominantly signaled the presence of negative feedback which resulted in prevention-focused motivations and avoidant online behaviors. Moreover, it seems that a lacking interest in sending friend requests is no valid approach to operationalize withdrawal from social interactions. Thus, future research should address how to measure withdrawal from social online interactions in the social media context validly. Vorderer and Schneider (2017) recently suggested different strategies (i.e., not participating in an online

discussion or regulating one's private settings to inhibit social contact) which might be interesting alternatives to investigate.

With respect to the research question, the type of social exclusion had no impact on the extent to which social media users behaved in an antisocial way—neither within nor after the Ostracism Online Tool. As studies in the offline context identified an increase in antisocial behavior for both forms of social exclusion (e.g., Gaertner et al., 2008; Poon & Wong, 2019), our findings are somewhat counterintuitive. The reason for this might be traced back to participants' everyday social media use: As they reported to rarely assign negative feedback via paralinguistic digital affordances to other users, using Dislike and Downvote buttons might not be an appropriate strategy for them to cope with social exclusion experiences. Consequently, more research is required to explore the link between cyber-ostracism/cyber-rejection and antisocial online behavior. For that purpose, future research should apply other operationalizations of antisocial online behavior (e.g., using inflammatory language in comment sections; Wesselmann & Williams, 2011).

As a weakness, the study's convenience sample limits the generalizability of the findings. As the data were only collected via Facebook and YouTube, users of other social media platforms were under-represented: Besides YouTube, only one fifth of the sample used platforms that offer Dislike and Downvote buttons as possible feedback options. This is disadvantageous in two respects: Firstly, it might have affected participants' emotional reactions to cyber-rejection (see the discussion regarding H2a–d). Secondly, it could have limited the ecological validity of the adapted Ostracism Online Tool. Although its original version is highly ecologically valid in manipulating cyber-ostracism (e.g., Schneider et al., 2017; Tobin et al., 2018; Wolf et al., 2015), the additional Dislike button could have produced—at least for the major part of our sample—a rather artificial situation. Another limitation is that this study followed a platform-unspecific approach. By using the Ostracism

Online Tool, we focused on feedback communicated via positive (Likes) and negative (Dislikes) affordances that participants received on their written profile description. Specific platforms do not only offer different types of feedback cues (e.g., Facebook's broad range of reactions: "Like," "love," "haha," "wow," "sad," and "angry"), but also different types of content that can receive feedback (e.g., pictures on Instagram). Therefore, we recommend future research to consider additional affordances of other platforms. Moreover, with regard to statistical test power, we recommend considering the smallest effect size of interest as a more appropriate estimate of effect size for calculating a-priori power analyses (Lakens, Scheel, & Isager, 2018). Our results have shown that it is questionable whether prior findings and effect sizes concerning social exclusion in an offline context can be transferred to social media as well. For instance, previous effect sizes for coping behavior were smaller, more disperse, and based only on a few studies (e.g., antisocial behavior: $d = 0.69$, 95% CI [0.08, 1.30]; Ren et al., 2016), whereas those for need threats were drawn from Hartgerink et al.'s (2015) meta-analysis, which found a very large effect size, rather small confidence intervals, and was based on many studies ($d = -1.36$, 95% CI [-1.54, -1.18]). The latter was also in line with our effect sizes concerning H1a–d.

Taken together, this paper emphasizes that exclusion experiences in social media—both lacking and negative feedback on a posted content—can have detrimental psychological consequences. Moreover, these findings can advance the temporal need-threat model in the context of social media. This model was initially introduced as a "model of ostracism's effect on individuals" (Williams, 2009, p. 279) and, when used in the context of social media, only applied to lacking feedback on a posted content (= cyber-ostracism; e.g., Schneider et al., 2017). Our study shows that this model can be extended to other similar online exclusion experiences. In line with the reflexive and reflective phases of Williams's (2009) temporal need-threat model of ostracism, social media users experienced need threats and behaviorally

coped with those threats also after being cyber-rejected. Given that cyber-rejection led to stronger need threats than cyber-ostracism, this extension seems to be highly relevant and warrants further investigation.

However, this study only focused on reflexive and reflective consequences of either cyber-ostracism or cyber-rejection. Therefore, it would be interesting to investigate long-term effects within the resignation stage, namely how repeated exposure to different types of social exclusion negatively affects social media users' overall well-being. Moreover, future research could also focus on users' emotional and behavioral reactions to different intensities of cyber-rejection. Compared to offline situations, social media users can address a much broader audience with their posted content and, thus, are more prone to receive negative reactions. Given our study's operationalization of "rejection" as receiving six Dislikes, the minimal acknowledgement hypothesis was only tested for low to moderate levels of social exclusion. Therefore, future research could investigate how ostracism relates to more intense levels of rejection (e.g., receiving zero Likes and 100 Dislikes).

Nonetheless, the positive effects of social media use in terms of need restoration should not be neglected: For instance, seeing the Facebook symbol (Knausenberger, Hellmann, & Echterhoff, 2015) or even the word "Facebook" (Chiou, Lee, & Liao, 2015) after an ostracism episode can serve as a reminder of social contacts and thus restore threatened needs. Moreover, recent research has shown that social media users who experience long-term ostracism form and maintain relationships on Twitter to satisfy their unmet need for belonging (Iannone, McCarty, Branch, & Kelly, 2018). As cyber-rejection was shown to be even more threatening to fundamental needs than cyber-ostracism, we highly recommend that future research investigates whether coping with social media is also an appropriate strategy for need restoration after being rejected through negative feedback on a posted content.

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Figures

Figure 1. Group-specific means for need threat with 95% CIs

Figure 2. Group-specific means for coping behavior after the Ostracism Online Tool with 95% CIs

Figure 3. Group-specific means for coping behavior within the Ostracism Online Tool with 95% CIs