Full length article

Reactions to others' misfortune on social media: Effects of homophily and publicness on schadenfreude, empathy, and perceived deservingness

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ABSTRACT

Social media has become a popular venue for support seeking, which often involves self-disclosure about one's misfortune. To examine how help-related emotions and cognitions as responses to such disclosure might be influenced by technological factors, we conducted a 2 (interpersonal similarity: low vs. high) x 3 (message publicness: private vs. moderate vs. public) between-participants experiment online. Findings suggest that seeing disclosure about a personal misfortune from a dissimilar other, as compared with a similar other, elicited schadenfreude and inhibited empathy via heightened perceived deservingness among message recipients. Also, such effects were more prominent when the self-disclosure messages were visible within a given network of friends as compared to when messages were made completely public to everyone or exclusively directed to the observer.

1. Introduction

Increasingly, people seek support on social media platforms, taking advantage of the broader reach of audience afforded by the high publicness of social media platforms, but solicitations do not guarantee supportive responses (Frison & Eggermont, 2015; Tichon & Shapiro, 2003). Seeking support often involves revealing one's vulnerability and describing one's plight, which is then subject to observers' appraisal in terms of justice—whether the misfortune is deserved or not (Feather, Wenzel, & McKee, 2013), while also might induce emotions such as empathy that motivates support providing (Liu & Wei, 2018), or schadenfreude that impedes it (Leach, Spears, & Manstead, 2015). Hence, the success of support seeking is contingent on potential support providers' appraisal and affective reactions.

Research suggests that both individuals' appraisal of deservingness and their affective reactions towards the distressed other depend on the self-other social distance (Liviatan, Trope, & Liberman, 2008; Tesser & Campbell, 1982). For instance, we tend to experience schadenfreude more when witnessing our rival's pain than that of those who are dear and close to us (Combs, Powell, Schurtz, & Smith, 2009). Social media, designed to connect people, are rich in cues with implications for perceived interpersonal distance. First, social media platforms often have cues quantifying social distance with metrics such as number of shared friends, shared hobbies, interaction history, etc. These metrics might serve as heuristic cues and influence users' psychological distance to

other social media users (Sundar, 2008). Second, message publicness, namely the visibility of a message on social media, is another factor that has been found to influence one's perception of intimacy and social distance (Bazarova, 2012; Liu & Kang, 2017).

Against this backdrop, the current study investigates effects of social distance cues and message publicness on individuals' helping-related judgments and emotions towards others' misfortune on social media, namely perceived deservingness, schadenfreude, and empathy, to better understand the role of technological factors in supportive communication occuring in the cyberspace and to provide practical suggestions for social media designers to facilitate online helping and for users to marshal support successfully.

2. Literature review

Before discussing potential effects of social distance cues and message publicness, we first explicate their outcomes concerned in the current study—emotional and cognitive reactions to others' misfortune, namely, schadenfreude, empathy, and perceived deservingness, as well as articulate their conceptual and empirical relationships.

2.1. Reactions to others' misfortune

2.1.1. Schadenfreude
Schadenfreude has been defined as pleasant feelings towards

another's misfortune (Smith et al., 1996). Compared to gloating, schadenfreude takes a more implicit, secret, and indirect form of pleasure (Leach et al., 2015). As schadenfreude usually manifests itself in the form of elevated agreeable feelings (Smith et al., 1996; van Dijk, van Koningsbruggen, Ouwerkerk, & Wesseling, 2011), one might categorize it as a positive emotion. However, schadenfreude is more complex than that (Solomon & Stone, 2002).

Consistent with the notion of harmonious coexistence of positive and negative emotions in one setting (e.g., Fong & Tiedens, 2002), in describing emotional reactions, schadenfreude is often interchangeably used with *malicious joy* (Leach et al., 2015) which comprises both positive (i.e., joy) and negative (i.e., malicious) meanings. While schadenfreude might be dominated by pleasure and joy, as suggested by extant studies, it heralds ill-intents that should not be neglected. For instance, using the functional magnetic resonance imaging (fMRI) technique, Cikara, Botvinick, and Fiske (2011) found significant correlations between activated pleasure and harmful behavioral tendencies towards others in neural activities. Other studies using self-report measurement yielded similar results such that schadenfreude shares commonalities with both vengeance (Sawada & Hayama, 2012) and envy (another ambivalent emotion, see Feather & Nairn, 2005). A recent framework of schadenfreude has delineated three forms of schadenfreude characterized by readiness of different actions—aggression, rivalry, and justice (Wang, Lilienfeld, & Rochat, 2019). Under this framework, going beyond mere expressions of pleasure, schadenfreude arguably involves negative action readiness towards another. Hence, we consider *ambivalent emotion* as the most appropriate umbrella term for schadenfreude.

2.1.2. Empathy

Besides schadenfreude, one might also experience empathy upon exposure to others' misfortune. Research thus far suggests there are at least three sub-forms of empathy, respectively cognitive empathy (i.e., perspective-taking), affective empathy (i.e., shared affect), and associative empathy (i.e., identification with the target) (Eisenberg & Fabes, 1990; Shen, 2010; Stiff, Dillard, Somera, Kim, & Sleight, 1988), all of which are possible to occur upon exposure to a message of someone disclosing their misfortune and are conducive for action taking such as helping. In addition, people might also experience egoistic reactions such as personal distress (Batson, Fultz, & Schoenrade, 1987), sadness (Fultz, Schaller, & Cialdini, 1988), and compassion (Lim & DeSteno, 2016) towards others' sufferings. Yet, compared to empathy, these egoistic motivations do not necessarily lead to help-related actions when other options to alleviate personal distress are available (Batson et al., 1987), and empirical research found no guarantee of subsequent helping behaviors as a result of sadness and compassion (Cialdini et al., 1987; Dovidio, Allen, & Schroeder, 1990; Lim & DeSteno, 2016). Therefore, the present study focuses on empathy in light of its prosocial implications.

Many researchers have regarded empathy as the opposite side of the same coin to schadenfreude. Empirical evidence hitherto has revealed a moderate negative correlation between schadenfreude and empathy such that people could concurrently experience heightened schadenfreude and dampened empathic feelings towards another's misfortune (Cikara et al., 2011). Nonetheless, empathy should not be simply regarded as the "mirror image" of schadenfreude (Greitemeyer, Osswald, & Brauer, 2010, p. 800) because prosocial orientations are involved in predictions of empathy but not schadenfreude (Feather & Sherman, 2002; Greitemeyer et al., 2010). Therefore, when examining individuals' reactions to others' misfortunes, we should assess both together to better understand their emotional experience.

2.1.3. Deservingness

Driven by individuals' inclinations to find causes for one's success and failure (Weiner, 1985), observers of others' misfortune often automatically engage in evaluations to determine if their pains are warranted. Specifically, the judgement of deservingness is often guided by a just-world belief such that the good people deserve the good outcomes while the bad deserves the misfortune (Apsler & Friedman, 1975; Feather, 1993; Lerner, 1980). For example, Callan, Dawtry, and Olson (2012) found that individuals tended to punish an older wrongdoer less harshly than a younger one as they considered it unfair for the elder to suffer. Other studies have found similar patterns when justice reasoning is involved in assessing the deservingness of cheated men in car accidents (Callan, Ellard, & Nicol, 2006), the winners and losers in the 1971 national draft lottery (Rubin & Peplau, 1973), etc.

Moreover, research has also found that both schadenfreude and empathy are guided by one's judgement of deservingness. Specifically, if the negative outcome is found well deserved, antisocial emotions such as schadenfreude and resentment will be heightened, whereas if the distressed other is not the person to blame, emotions leading to helping such as empathy and sympathy will arise (Feather et al., 2013; Feather & McKee, 2009; Feather, McKee, & Bekker, 2011).

Perceptions of deservingness, schadenfreude, and empathy may occur more or less depending on the nature of the misfortune and whom it happens to. Research has found reactions to others' suffering vary greatly as a function of the social distance between the observer and the distressed other (Liviatan et al., 2008). In general, we have more favorable perceptions towards someone of shorter psychological distance to us than distant others (Tesser & Campbell, 1982). Specifically, if the distressed other is considered as an ingroup member or someone close to us, we are then more likely to feel the misfortune as less deserving and, experience more empathy and less schadenfreude.

On social media, in particular, perceptions of closeness can be influenced by technological factors. Specifically, social media metrics indicating similarity among user in terms of shared network, background, etc., might influence how close a distressed other is perceived. Publicness, the visibility of a message, might also influence perceived personalism and intimacy (Liu & Kang, 2017; Liu & Wei, 2018). In the following sections, we delineate possible effects of social distance cues and message publicness along with their underlying mechanisms.

2.2. Effect of social distance cue on social media

In-group favoritism or homophily has been widely observed in social psychology research and serves as a driving force in interpersonal interactions. Interpersonal similarity as one dimension of social distance fosters homophily (Liviatan et al., 2008). For example, past research suggests that interpersonal similarity leads to more knowledge sharing behaviors (Makela, Kalla, & Piekkari, 2007), increases interpersonal attraction (Lydon, Jamieson, & Zanna, 1988), and engenders more favorable perceptions towards the other (Anderson, Huttenlocher, Kleinberg, & Leskovec, 2012), etc., as individuals regard similar others as in-group members with whom they are more psychologically close.

Homophily can be easily cultivated even when the similarity between people is only superficial. For instance, Kaptein, Nass, Parvinen, and Markopoulos (2013) experimentally manipulated interpersonal similarity by instructing participants to answer a series of same questions and compare their answers to create feelings of sharing and to amplify perceived similarity towards the other. They found that those put in the high-similarity condition showed greater compliance to their interacting partner, even when the partner was not familiar to them. In this regard, built to networked people, social media platforms are rich in social distance cues suggesting common background such as commonly used tags (Aiello et al., 2012) and shared personal interests (Anderson et al., 2012), which significantly influences people's perceptions of one another and their subsequent interactions (Kang & Liu, 2018).

In line with the discussion above, social distance cues on social media can influence how observers react to a distressed other's misfortune such that more schadenfreude is expected to be elicited towards the dissimilar other's misfortune. Schadenfreude has long been regarded as an intergroup emotion (Combs et al., 2009; Spears & Leach,

2004) that allows people to derive joy from another group's suffering (Leach, Spears, Branscombe, & Doosje, 2003) across various contexts. Previous research shows that schadenfreude is more likely to occur towards out-group members than in-group ones. In one study situated in soccer games, Leach et al. (2003) found that Dutch participants held more schadenfreude towards a German (i.e., the rival group) loss. In political and consumer contexts, Ouwerkerk, Van Dijk, Vonkeman, and Spears (2018) corroborated the positive effect of in-group identifications on schadenfreude reactions towards out-group members' misfortunes. Likewise, Cikara, Bruneau, Van Bavel, and Saxe (2014) found that individuals showed less schadenfreude and more empathy towards in-group targets in competitions.

As for empathy, Rogers and Bhowmik (1970) once pointed out that it was difficult to empathize with a dissimilar person as a larger discrepancy between the self and the other can prevent people from recognizing others' feelings (Halpern, 1955). Empirical evidence generally supports this idea. In online communities, Preece (1999) found that similar personal backgrounds and shared experiences could foster empathy towards one another. Eklund, Andersson-Stråberg and Hansen (2009) also found that prior similar experience could induce empathy-related emotions. Hence, a misfortune disclosed by a message sender similar to oneself should provoke more empathy than that from a dissimilar one. Overall, we predict that reading a message posted on social media by someone who is of a lower level of similarity and therefore, more psychosocially distant would induce more schadenfreude and less empathy than that by a similar other.

Homophily also fosters more positive judgements towards similar others than dissimilar others. Specific to judging the deservingness of one's misfortune, a similar other is less likely to be judged as deserving the suffering than the dissimilar others. Taormina and Messick (1983) found that when determining whether a country deserved foreign aid or not, if the target country's form of government aligned with participants', then they were more likely to rate the financial aid as deserved. Feather (2015) found that people tended to judge the in-group members (i.e., similar others) as deserving the positive outcome more than the out-group members (i.e., dissimilar others). Correia, Vala, and Aguiar (2007) corroborate these findings by concluding that the sufferings of an in-group member posed more threats to one's belief in a just world compared to sufferings of an out-group member. Thus, if a misfortune befalls, a dissimilar other should be more likely to be deemed as deserving the negative outcomes than a similar other. Furthermore, increased perceived deservingness can heighten one's schadenfreude (Feather et al., 2013) and decrease one's empathy (Lee, Winterich, & Ross Jr, 2014) towards the suffering other.

Taken together, we predict the effect of a similarity cue on schadenfreude, empathy, and perceived deservingness as such, where the more similar a person is with the other, the less likely his/her misfortune is judged as deserving, which ultimately leads to lessened schadenfreude and more empathy towards the other's misfortune. In addition, in light of perceived deservingness being an antecedent to schadenfreude and empathy, we further propose the perceived deservingness as a critical mediator.

H1. On social media, receiving a message about a misfortune of a less similar other will induce **(a)** more schadenfreude, **(b)** less empathy, and **(c)** more perceived deservingness than that from a similar other.

H2. Misfortune posted on social media by a less similar other will induce **(a)** more schadenfreude and **(b)** less empathy than that posted by a more similar other via heightened perceived deservingness.

2.3. Effect of message publicness

Message publicness is defined as the visibility of a message on social media (Baym & boyd, 2012; Marwick & Ellison, 2012). On Facebook, for instance, a user can choose to post messages to everyone on

Facebook, only to his/her Facebook friends, or to a specific (set of) user (s). Similar designs have been implemented on other popular social media platforms, such as Twitter, Instagram, and Snapchat. Research has found the publicness of self-disclosure on social media influences psychological distance (Bazarova, 2012; Liu & Wei, 2018), which might further influence how observers appraise the deservingness of one's misfortune and how they emotionally react. However, the direction of such influence remains equivocal.

On the one hand, past research indicates that increased message publicness leads to decreased empathy for one's suffering disclosed in the message in that public messages are regarded as less personal compared to private ones which message receivers perceive as only *for* them (Liu & Wei, 2018). This heightened sense of personalism can shorten one's psychological distance with the support seeker, thus prompting message receivers to empathize with the support seeker. In addition, high publicness on social media also requires individuals to behave in an appropriate way when interacting with other users (Baym & boyd, 2012). In this respect, public postings about personal and intimate issues are regarded as less appropriate than private messages (Bazarova, 2012; Liu & Kang, 2017) which can reduce message receivers' liking for the sender and inhibit their empathy for the misfortune (Liu & Wei, 2018). Therefore, increased publicness of social media messages disclosing personal sufferings should blunt message receivers' empathy. Moreover, message publicness might also influence schadenfreude and perceived deservingness. Research has found that liking for others attenuates schadenfreude towards them (van Dijk, Goslinga, & van Hoek, 2004) and the perceived deservingness of their misfortune (Feather, 1999). Therefore, compared to a private message, we would expect a public message to decrease message receivers' liking for the sender and lead them to unleash their schadenfreude and perceive the misfortune as more well deserved.

On the other hand, high publicness of a setting might also discourage antisocial and encourage prosocial judgements and emotions due to individuals' more concerns for social desirability in public settings than in private. Marwick and Ellison (2012) analyzed users' posts and comments on Facebook memorial pages and found public mourning encouraged more people to show their support and leave positive comments than private grief. Kim and Gonzales (2018) found that individuals judged negative feedback received in an online discussion group less harshly when it was made in public than private. Hence, besides normative judgments made on the appropriateness of a public post, message receivers' reactions to others' misfortunes are also subject to social norms in public settings, such as refraining from sending hurtful messages to others for relational maintenance and showing respect to others' sufferings (Bryant & Marmo, 2012; Marwick & Ellison, 2012). In this case, people might instead project more empathy, less schadenfreude, and less perceived deservingness towards a public negative self-disclosure on social media than a private one.

In addition, message publicness might influence the impact of interpersonal similarity on how one reacts to others' misfortune. Although we are less likely to empathize and more likely to experience schadenfreude towards a dissimilar other, if the message is sent in private (as opposed to public), then it is possible that personalism suggested in the private communication might make up for the lack of similarity.

In light of different predictions as suggested by existing research, we propose research questions regarding the effects of message publicness on schadenfreude, empathy, and perceived deservingness. Again, given that perceived deservingness is typically treated as the antecedent of emotional outcomes, we propose the second research question—-whether perceived deservingness would mediate the relationship between publicness and emotional reactions as follows.

RQ1. On social media, how might message publicness influence **(a)** schadenfreude, **(b)** empathy, and **(c)** perceived deservingness?

RQ2. On social media, how might message publicness influence **(a)** schadenfreude and **(b)** empathy via perceived deservingness?

RQ3. On social media, how might message publicness moderate effects of similarity on one's **(a)** schadenfreude, **(b)** empathy, and **(c)** perceived deservingness towards others' misfortunes?

RQ4. On social media, how might message publicness moderate effects of similarity on one's **(a)** schadenfreude and **(b)** empathy towards others' misfortunes via perceived deservingness?

3. Method

To test our hypotheses and answer our research questions, we conducted a 2 (similarity: low vs. high) x 3 (message publicness: private vs. moderate vs. public) between-participants online experiment. The first factor, similarity, was manipulated by telling participants the extent to which they were similar to the message sender. The second factor, publicness, was manipulated by varying the visibility of the message as set by the message sender, respectively visible to only the participant (i.e., the private condition), the message sender's friends (i.e., the moderate condition), or everyone on social media (i.e., the public condition). After seeing the stimuli, participants were asked to report their emotional (i.e., schadenfreude and empathy) and cognitive (i.e., perceived deservingness) responses to the message sender.

3.1. Sample

We recruited 401 participants located in the United States from the Amazon's Mechanical Turk. There are 147 males and 252 females, with 3 indicating "other." Their age ranges from 19 to 78 ($M = 39.21$, $SD = 12.81$). Among all, 291 participants identified themselves as Caucasian (72.6%), 35 as African American (8.7%), 30 as Asian/Pacific Islander (7.5%), 16 as Hispanic/Latino (4.0%), 5 as Native American (1.2%), 16 as multiracial (4.0%), 6 as Other (1.5%), and 2 did not report their ethnicity (0.5%). Overall, 55.90% participants reported to hold a Bachelor's degree or higher. Upon successful completion of the study, each participant was compensated with $0.25.

3.2. Stimuli

All the messages were created within the template of Facebook. Consistent with past research, we manipulated message publicness by varying the degree of message visibility (e.g., Liu & Kang, 2017; Liu & Wei, 2018). As shown in Appendix A, the public post indicates that Alex's message is visible to everyone on Facebook, and the moderate-level public post indicates that the message is only visible to Alex Taylor's friends on Facebook, whereas for the private condition, the message was purported to be sent only to the participant as a private message and only visible to the participant.

To enhance the study's validity, in accordance with past research (e.g., Bodie et al., 2011; Liu & Wei, 2018), we selected three types of unfortunate personal issues that could commonly occur in daily life to create the messages, respectively being scolded by supervisor at workplace, having daily routines incompatible with a roommate, and having financial difficulty (see Appendix B). The message contents have been validated in previous studies regarding their similarity in terms of accountability and normativeness (Jones & Wirtz, 2006; Liu & Wei, 2018). Participants were randomly assigned to read a message on one of these three topics, resulting in a total number of 18 different conditions in the current study. The participant distribution is listed in Table 1.

3.3. Measurement

Unless indicated, all the items were measured with 7-point Likert-type scales, where 1 = Strongly disagree, and 7 = Strongly agree.

3.3.1. Manipulation check
3.3.1.1. Similarity index. We asked participants to recall the similarity

Table 1
The number of participants across conditions.

Publicness	Similarity	Issue Type		
		Work	Roommate	Finance
Private	Low	24	20	15
	High	18	17	23
Moderate	Low	24	22	25
	High	20	18	16
Public	Low	22	22	22
	High	23	23	21

index that had been presented to them before reading Alex's message and choose the right one among "10%," "20%," "80%," and "90%." Those who failed to provide the correct answer ($n = 26$) were removed from the final dataset.

3.3.1.2. Perceived social distance. We measured participants' perceived social distance with Alex to ensure the success of our experimental manipulation with four items adapted from Kang and Liu (2018). Sample items include "I feel close to Alex," $M = 3.00$, $SD = 1.68$, Cronbach's $\alpha = 0.94$.

3.3.2. Perceived deservingness
We measured perceived deservingness of Alex's misfortune using the four-item scale adapted from Feather et al. (2013). Sample item is "To what extent did you think the misfortune was merited?" $M = 3.27$, $SD = 1.56$, Cronbach's $\alpha = 0.93$.

3.3.3. Schadenfreude
Past research informs us of multiple ways to capture schadenfreude. The most direct way is to ask participants to self report schadenfreude using evaluative statements (e.g., Van Dijk, Ouwerkerk, Goslinga, Nieweg, & Gallucci, 2006) or lists of adjectives to describe state affect such as *satisfied* and *resentful* (e.g., Greenier, 2015; Piskorz & Piskorz, 2009) in light of the complex nature of schadenfreude. In addition, some scholars proposed to use implicit self-esteem as a proxy of implicit schadenfreude as seeing others' negative experience could augment recognitions of self-worth (Gao et al., 2014). Therefore, we used multiple measurements to capture schadenfreude as follows.

3.3.3.1. Positive affect. We measured participants' positive affect after reading Alex's message using five items in Greenier (2015). Sample items include "Content" and "Happy with outcome," $M = 2.77$, $SD = 1.33$, Cronbach's $\alpha = 0.85$.

3.3.3.2. Negative affect. We measured participants' negative affect after reading Alex's message using five items in Greenier (2015). Sample items include "Frustrated" and "Angry," $M = 2.57$, $SD = 1.37$, Cronbach's $\alpha = 0.91$.

3.3.3.3. Schadenfreude perception. We measured participants' explicit schadenfreude perception towards Alex using the five-item scale adapted from Van Dijk and colleagues (Van Dijk et al., 2006). Sample items include "What happened to Alex gave me satisfaction," $M = 1.93$, $SD = 1.26$, Cronbach's $\alpha = 0.91$.

3.3.3.4. Implicit self-esteem. We employed a survey-based implicit association test (IAT) within Qualtrics using the *iatgen* tool (Carpenter et al., 2018) to measure participants' implicit self-esteem after reading Alex's post. In line with past research (Gao et al., 2014; Greenwald & Farnham, 2000; Spalding & Hardin, 1999), this test intended to examine how strongly participants would associate positive words (e.g., good, proud) with "self" and negative words (e.g., bad, loser) with "others," $M_{d\text{-}score} = 0.55$, $SD_{d\text{-}score} = 0.40$, reliability = 0.81.

Notably, the IAT score for 27 participants was missing.

3.3.4. Empathy

Adapted from Shen (2010), we measured *affective empathy* using four items including "Alex's emotions were genuine" (*M* = 4.01, *SD* = 1.46, Cronbach's α = 0.82), *cognitive empathy* with four items including "I could see Alex's point of view" (*M* = 4.82, *SD* = 1.50, Cronbach's α = 0.89), and *associative empathy* with four items including "I could relate to what Alex was going through in this message" (*M* = 4.25, *SD* = 1.65, Cronbach's α = 0.88).

3.4. Procedure

After obtaining participants' informed consent, we told participants to help us test a feature to be incorporated by Facebook called "similarity-test" in order to help users find friends of similar interests. Then we introduced a social media user, Alex Taylor (a unisex name) with whom participants had no prior interaction with, as one of the Facebook users we had invited for the beta-testing of this feature. Participants were then informed that we would like to see to what extent they were similar to Alex and instructed to answer five questions related to their personal interests such as their favorite book genres and ideal vacation places.

Once they finished, all the participants were instructed to wait for 5 seconds while the system was calculating their similarity index to Alex. For participants assigned to the low-similarity condition, they were told that they did not have much in common with Alex as they matched on only one out of five questions, resulting in a similarity index of 20%. For those assigned to the high-similarity condition, instead, were told to be very similar with Alex as they matched on four out of five questions, resulting in an 80% similarity index. This procedure was adapted from previous research (Kang & Liu, 2018) that manipulated similarity alike.

After that, all the participants were assigned to read one Facebook post where Alex described a negative personal issue on one of three topics selected randomly and instructed to imagine as if they ran into Alex's message while using Facebook. Upon finishing reading the post, they were first directed to the implicit association test, and then answered questions related to their experience.

4. Results

4.1. Manipulation checks

To check our manipulation of similarity, we first asked participants to recall the extent to which they were similar to Alex, and 26 participants failed the manipulation check. Therefore, the final dataset then consists of 375 participants (*N* = 375).

To furthur validate our manipulation of similarity, we conducted an independent-samples *t*-test on perceived social distance between participants in the high- and low-similarity conditions. The analysis revealed significant effect of similarity manipulation such that participants in the high-similarity condition reported a significantly higher level of perceived social distance with Alex (*M* = 3.81, *SD* = 1.62, *SE* = 0.12) than those in the low-similarity condition (*M* = 2.26, *SD* = 1.36, *SE* = 0.10), $t(347.92^1)$ = 9.99, *p* < .001, two-tailed. Hence, we considered our manipulation of similarity as successful.

4.2. Data analysis

4.2.1. Data analysis strategy

We checked outliers, skewness, and kurtosis for each dependent variable within each of the six experimental conditions. We found no outlier and all the variables passed the normality check. Table 2 reports bivariate correlations among outcome variables. To test H1, RQ1, and answer RQ3, we conducted an omnibus multivariate analysis of variance (MANOVA) and we also examined the follow-up univariate analysis of variance,[2] where the homogeneity of variance and covariances was not violated. Notably, along with our two independent variables (i.e., similarity and publicness), we also listed *issue type* (0 = work, 1 = roommate, 2 = finance) in stimuli as the third independent variable to examine if participants reading different types of personal misfortunes should be collapsed into the same condition. Perceived deservingness, negative affect, positive affect, implicit self-esteem, self-reported schadenfreude, affective empathy, cognitive empathy, and associative empathy were listed as the set of dependent variables. Although we observed a main effect of issue type (Wilk's Λ = 0.73, $F(16, 646)$ = 7.01, *p* < .001, partial η^2 = 0.148), it did not significantly interact with similarity and/or publicness. Hence, we statistically controlled for its effect when conducting mediation and moderated mediation analyses as presented in later sections.

To test H2 and answer RQ2, we employed the simple mediation model (i.e., Model 4) in the PROCESS 3 in SPSS (Hayes, 2018) with similarity or publicness being the independent variable, perceived deservingness as the mediating variable, and emotion-related outcome variables as the dependent variable separately. Notably, in light of the main effect of issue type on several outcome variables, we created two dummy-coded variables, respectively issueA (0 = work, 1 = roommate) and issueB (0 = work, 1 = finance), and listed them as covariates in the model. We requested bootstrapping of 5000 samples with 95% Confidence Interval (CI).

To answer RQ4, we further requested the moderated mediation model (i.e., Model 7) of PROCESS 3 in SPSS (Hayes, 2018) where publicness was listed as the moderator with other set-ups remaining the same as aforementioned. In the following sections, we reported our findings accordingly in the order of arguments listed in the literature review section.

4.2.2. Effects of similarity on emotional and cognitive outcomes

We found a significant main effect of similarity on emotional and cognitive outcomes overall (Wilk's Λ = 0.94, *F*(8, 323) = 2.47, *p* = .013, partial η^2 = 0.058). As shown in Table 3, the analyses revealed significant main effects of similarity on perceived deservingness, affective empathy, and cognitive empathy. More specifically, participants in the low-similarity condition reported significantly heightened perceived deservingness (*M* = 3.49, *SE* = 0.10), decreased affective empathy (*M* = 3.79, *SE* = 0.11) and cognitive empathy (*M* = 4.66, *SE* = 0.11) than those in the high-similarity condition (perceived deservingness, *M* = 2.89, *SE* = 0.10; affective empathy, *M* = 4.22, *SE* = 0.11; cognitive empathy, *M* = 5.05, *SE* = 0.12).

Furthermore, as shown in Table 4, we found significant indirect effects of similarity on positive affect, schadenfreude perception, affective empathy, cognitive empathy, and associative empathy. Specifically, seeing similar others' suffering induced less perceived deservingness, which led to less positive affect and schadenfreude perception, and more empathy. Therefore, both H2(a) and H2(b) were supported.

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[1] Levene's test for equality of variances was significant, *F* = 13.34, *p* < .001. Therefore, we refer to the *t*-test statistics with equal variances not assumed.

[2] In spite of non-significant main effect of publicness and the interaction effect between similarity and publicness, we aspired to better understand the role of message visibility in the context of online supportive communication. Therefore, we also reported results of the univariate analyses of variance on the main effect of publicness and its moderating effect and also the results of moderated mediation.

Table 2
Bivariate Correlations.

	1	2	3	4	5	6	7	8
1. Perceived deservingness								
2. Negative affect	.02							
3. Positive affect	.25***	.11*						
4. Implicit self-esteem	-.05	-.03	.05					
5. Schadenfreude perception	.32***	.16***	.41***	-.11*				
6. Affective empathy	-.32***	.31***	.03	-.02	-.08			
7. Cognitive empathy	-.37***	.17***	-.07	.07	-.23**	.76***		
8. Associative empathy	-.31***	.24***	-.01	.01	-.13**	.81***	.83***	

Note. Two-tailed significance is presented. *$p < .05$, **$p < .01$, ***$p < .001$.

Table 3
Summary of Main Univariate Analyses of Variance.

	Similarity	Publicness	Similarity x Publicness
Perceived deservingness	$F(1, 330) = 15.97, p < .001$, partial $\eta^2 = .046$	$F(2, 330) = 0.18, p = .836$, partial $\eta^2 = .001$	$F(2, 330) = 2.29, p = .103$, partial $\eta^2 = .014$
Negative affect	$F(1, 330) = 0.35, p = .555$, partial $\eta^2 = .001$	$F(2, 330) = 0.88, p = .416$, partial $\eta^2 = .005$	$F(2, 330) = 0.89, p = .411$, partial $\eta^2 = .005$
Positive affect	$F(1, 330) = 3.45, p = .064$, partial $\eta^2 = .010$	$F(2, 330) = 1.29, p = .278$, partial $\eta^2 = .008$	$F(2, 330) = 3.34, p = .037$, partial $\eta^2 = .020$
Implicit self-esteem	$F(1, 330) = 0.01, p = .924$, partial $\eta^2 = .000$	$F(2, 330) = 0.65, p = .525$, partial $\eta^2 = .004$	$F(2, 330) = 0.10, p = .907$, partial $\eta^2 = .001$
Schadenfreude perception	$F(1, 330) = 1.67, p = .198$, partial $\eta^2 = .005$	$F(2, 330) = 0.18, p = .839$, partial $\eta^2 = .001$	$F(2, 330) = 0.72, p = .489$, partial $\eta^2 = .004$
Affective empathy	$F(1, 330) = 7.61, p = .006$, partial $\eta^2 = .023$	$F(2, 330) = 1.02, p = .362$, partial $\eta^2 = .006$	$F(2, 330) = 0.27, p = .762$, partial $\eta^2 = .002$
Cognitive empathy	$F(1, 330) = 5.692, p = .018$, partial $\eta^2 = .017$	$F(2, 330) = 0.65, p = .524$, partial $\eta^2 = .004$	$F(2, 330) = 0.41, p = .665$, partial $\eta^2 = .002$
Associative empathy	$F(1, 330) = 3.765, p = .053$, partial $\eta^2 = .011$	$F(2, 330) = 0.35, p = .709$, partial $\eta^2 = .002$	$F(2, 330) = 0.21, p = .814$, partial $\eta^2 = .001$

Table 4
Effects of similarity as mediated by perceived deservingness.

	Direct effect	Indirect effect	Total effect
Negative affect	$B = 0.22, SE = 0.14, p = .116$	$B = -0.04$, Boot $SE = 0.03$, 95%CI [-.10, .01]	$B = 0.19, SE = 0.14, p = .187$
Positive affect	$B = -0.03, SE = 0.13, p = .798$	$B = -0.13$, Boot $SE = 0.05$, 95%CI [-.24, -.05]	$B = -0.17, SE = 0.14, p = .226$
Implicit self-esteem	$B = -0.01, SE = 0.04, p = .906$	$B = 0.01$, Boot $SE = 0.01$, 95%CI [-.005, .04]	$B = 0.01, SE = 0.04, p = .848$
Schadenfreude perception	$B = 0.11, SE = 0.12, p = .373$	$B = -0.17$, Boot $SE = 0.06$, 95%CI [-.29, -.07]	$B = -0.07, SE = 0.13, p = .610$
Affective empathy	$B = 0.26, SE = 0.14, p = .072$	$B = 0.16$, Boot $SE = 0.05$, 95%CI [.06, .27]	$B = 0.42, SE = 0.15, p = .006$
Cognitive empathy	$B = 0.14, SE = 0.15, p = .329$	$B = 0.20$, Boot $SE = 0.06$, 95%CI [.08, .33]	$B = 0.34, SE = 0.15, p = .03$
Associative empathy	$B = 0.17, SE = 0.16, p = .292$	$B = 0.18$, Boot $SE = 0.06$, 95%CI [.07, .32]	$B = 0.35, SE = 0.17, p = .038$

4.2.3. Effects of publicness on emotional and cognitive outcomes

In answering RQ1 and RQ2, we did not find significant main effect of publicness (Wilk's $\Lambda = 0.97$, $F(16, 646) = 0.65$, $p = .840$, partial $\eta^2 = 0.016$), and Table 3 further indicated non-significant differences on emotional and cognitive outcomes when the level of publicness varied. Then, to examine reactions towards publicness cues via perceived deservingness, we found perceived deservingness did not mediate the relationship between publicness and any emotional outcome (as shown in Table 5).

4.2.4. Interaction effect of similarity and publicness

In answering RQ3, overall, we did not find significant interaction effect on outcome variables, Wilk's $\Lambda = 0.96$, $F(16, 646) = 0.79$, $p = .696$, partial $\eta^2 = 0.019$. That said, we found a significant interaction effect of similarity and publicness on positive affect ($F(2, 330) = 3.34$, $p = .037$, partial $\eta^2 = 0.020$). As shown in Fig. 1, when seeing a message of moderate-level publicness, participants in the low-similarity condition reported significantly more positive affect ($M = 2.95$, $SE = 0.16$) than those in the high-similarity condition ($M = 2.18$, $SE = 0.18$, $p = .002$), whereas such difference was not salient when seeing a public or private Facebook post, thus partially supporting H3(a) and rejecting H3(b).

As shown in Table 6, significant indirect effects of similarity via perceived deservingness were observed only in the *moderate publicness* condition. In response to a misfortune visible only to Alex's Facebook friends, participants experienced higher level of positive affect and schadenfreude perceptions and lower level of affective empathy, cognitive empathy, and associative empathy towards Alex as a result of

higher level of perceived deservingness when Alex was a dissimilar other as compared with a similar other. Such indirect effects of similarity via perceived deservingness were not significant when the message was visible to only one or everyone on Facebook, which provides answers to our RQ4.

4.3. Summary of findings

To summarize, in examining effects of the similarity cue on cognitive and emotional outcomes on social media, partially confirming H1, support seeking with negative self-disclosure from a less similar person on social media led to more perceived deservingness, less affective empathy, and cognitive empathy compared to that from a more similar other. In addition, effects of similarity on positive affect, schadenfreude perception, and empathy were mediated by the perception of deservingness, which supported H2.

Furthermore, in exploring effects of message publicness on one's reactions to others' misfortunes, despite non-significant main effect of publicness, we found publicness moderate effect of similarity on positive affect. Specifically, the moderation effect was curvilinear such that when a message was posted on Facebook at a moderate level of publicness, seeing that from a dissimilar other led to higher level of positive affect than seeing that from a similar one, whereas no such discrepancy was found when the message was sent in private or to the general public. In addition, we found a similar curvilinear pattern for how message publciness moderated the indirect effect of similarity cue on one's emotional responses via perceived deservingness. These findings provided answers to RQ1-4.

Table 5
Effects of publicness as mediated by perceived deservingness.

	Relative direct effect		Relative indirect effect		Relative total effect	
	X1	X2	X1	X2	X1	X2
Negative affect	$B = -0.09$, $SE = 0.17$, $p = .597$	$B = -0.27$, $SE = 0.17$, $p = .112$	$B = -0.001$, Boot $SE = 0.02$, 95%CI [-.03, .03]	$B = -0.01$, Boot $SE = 0.02$, 95%CI [-.04, .02]	$B = -0.09$, $SE = 0.17$, $p = .595$	$B = -0.28$, $SE = 0.17$, $p = .104$
Positive affect	$B = 0.14$, $SE = 0.16$, $p = .385$	$B = 0.26$, $SE = 0.16$, $p = .115$	$B = -0.003$, Boot $SE = 0.05$, 95%CI [-.10, .10]	$B = -0.03$, Boot $SE = 0.05$, 95%CI [-.12, .06]	$B = 0.14$, $SE = 0.17$, $p = .414$	$B = 0.23$, $SE = 0.17$, $p = .180$
Implicit self-esteem	$B = 0.02$, $SE = 0.05$, $p = .678$	$B = 0.06$, $SE = 0.05$, $p = .223$	$B = 0.001$, Boot $SE = 0.01$, 95%CI [-.01, .01]	$B = 0.002$, Boot $SE = 0.01$, 95%CI [-.01, .01]	$B = 0.02$, $SE = 0.05$, $p = .662$	$B = 0.07$, $SE = 0.05$, $p = .213$
Schadenfreude perception	$B = 0.20$, $SE = 0.15$, $p = .183$	$B = 0.04$, $SE = 0.15$, $p = .784$	$B = -0.003$, Boot $SE = 0.07$, 95%CI [-.13, .12]	$B = -0.04$, Boot $SE = 0.06$, 95%CI [-.16, .07]	$B = 0.19$, $SE = 0.16$, $p = .228$	$B = 0.004$, $SE = 0.16$, $p = .981$
Affective empathy	$B = -0.11$, $SE = 0.18$, $p = .526$	$B = -0.24$, $SE = 0.18$, $p = .169$	$B = 0.003$, Boot $SE = 0.06$, 95%CI [-.12, .14]	$B = 0.04$, Boot $SE = 0.06$, 95%CI [-.08, .16]	$B = -0.11$, $SE = 0.19$, $p = .559$	$B = -0.21$, $SE = 0.18$, $p = .265$
Cognitive empathy	$B = -0.16$, $SE = 0.18$, $p = .377$	$B = -0.13$, $SE = 0.18$, $p = .468$	$B = 0.004$, Boot $SE = 0.08$, 95%CI [-.15, .16]	$B = 0.04$, Boot $SE = 0.07$, 95%CI [-.09, .19]	$B = -0.15$, $SE = 0.19$, $p = .425$	$B = -0.09$, $SE = 0.19$, $p = .653$
Associative empathy	$B = -0.03$, $SE = 0.20$, $p = .870$	$B = -0.15$, $SE = 0.20$, $p = .458$	$B = 0.004$, Boot $SE = 0.07$, 95%CI [-.14, .14]	$B = 0.04$, Boot $SE = 0.07$, 95%CI [-.09, .18]	$B = -0.03$, $SE = 0.21$, $p = .890$	$B = -0.11$, $SE = 0.21$, $p = .607$

Note. X1 = moderate, X2 = public, and the private condition was used as the reference group throughout.
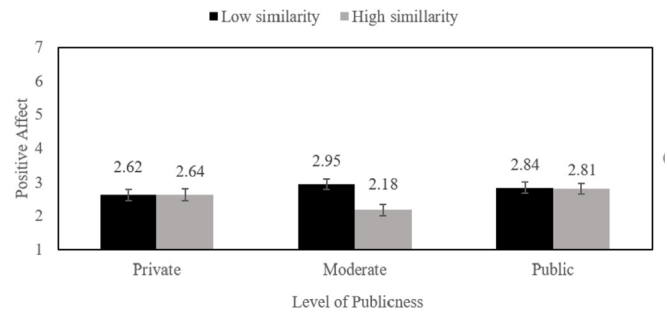
Fig. 1. Interaction effect of similarity and publicness on positive affect (error bars are presented using the Standard Error).

5. Discussion

5.1. Interpretation of findings

The current study assessed the effects of social media affordances—social distance cue and message publicness—on prosocial and antisocial emotions and cognitions including schadenfreude, empathy, and perceived deservingness, towards others' misfortune. As social media allows for a much broader reach of audiences than offline communication, it might seem to be a good place to reach out to potential support providers. However, as found in the current study, individuals' reactions are subject to contextual factors defined by the social media platform.

Consistent with findings in previous research (Combs et al., 2009) that individuals are more likely to derive pleasure from the misfortune of others who are more psychologically distant, the current study found that social distance cues influence how one judges the deservingness of others' misfortune which further impacts one's schadenfreude as embodied by positive affect and schadenfreude perception and empathy upon exposure to the message about the misfortune.

We further found that the impact of social distance cue was influenced by message publicness. Specifically, publicness moderated the effect of social distance on schadenfreude, empathy, and perceived deservingness such that only when the message was set as visible to the message sender's social media friends, similarity reduced schadenfreude (i.e., positive affect and schadenfreude perception) and enhanced empathy towards one's misfortune. But when it was only visible to the participant in private or when it was visible to literally everyone, social distance cue had no such effect.

This curvilinear effect of publicness found in the current study, although is not hypothesized in the very beginning, can be well explained in light of the literature on interpersonal and intergroup dynamics and also sheds light on how we should understand effect of publicness in the context of social media. Echoing previous work that found private messages foster a sense of personalism and motivate intentions to help (Liu & Wei, 2018), private messages on social media did remedy the perceptual ingroup-outgroup differences induced by the social distance cues. When the message was made visible to everyone, the discrepancy diminished as well in that the total lack of directedness and personal relevance made it hard for the message receiver to invest emotions when Alex might be assumed to be a complete stranger. Thus, it became insignificant in terms of how similar the message sender was to oneself, which accordingly, caused invariant evaluations of whether the other had deserved the misfortune or not. The more salient difference then, lies in the moderate-level publicness condition. When the visibility of the message was set as to "Friends," it suggested that participants were then part of Alex's network. But without knowing Alex in person, participants in this condition might consider Alex as a casual friend or acquaintance with whom close relationships were yet to form, where Bryant and Marmo (2012) found that people attended less to thinking how their reactions might hurt others' feelings. As a result, their

Table 6
Conditional Effects of Similarity via Perceived Deservingness at Different Publicness Level.

	Direct effect	Conditional indirect effect		
		Private	Moderate	Public
Negative affect	B = 0.22, SE = 0.14, p = .116	B = −0.01, Boot SE = 0.03, 95%CI [−.08, .03]	B = −0.07, Boot SE = 0.05, 95%CI [−.17, .03]	B = −0.03, Boot SE = 0.03, 95%CI [−.10, .01]
Positive affect	B = −0.03, SE = 0.13, p = .798	B = −0.05 Boot SE = 0.07, 95%CI [−.19, .08]	B = −0.23, Boot SE = 0.09, 95%CI [−.41, −.07]	B = −0.11, Boot SE = 0.07, 95%CI [−.25, .01]
Implicit self-esteem	B = −0.01, SE = 0.04, p = .906	B = 0.01, Boot SE = 0.01, 95%CI [−.01, .03]	B = 0.02, Boot SE = 0.02, 95%CI [−.01, .07]	B = 0.01, Boot SE = 0.01, 95%CI [−.004, .03]
Schadenfreude perception	B = 0.11, SE = 0.12, p = .373	B = −0.07, Boot SE = 0.09, 95%CI [−.24, .10]	B = −0.30, Boot SE = 0.10, 95%CI [−.51, −.11]	B = −0.15, Boot SE = 0.08, 95%CI [−.31, −.02]
Affective empathy	B = 0.26, SE = 0.14, p = .072	B = 0.06, Boot SE = 0.08, 95%CI [−.10, .22]	B = 0.27, Boot SE = 0.11, 95%CI [.08, .52]	B = 0.13, Boot SE = 0.08, 95%CI [−.01, .29]
Cognitive empathy	B = 0.14, SE = 0.15, p = .329	B = 0.07, Boot SE = 0.10, 95%CI [−.13, .28]	B = 0.34, Boot SE = 0.12, 95%CI [.11, .59]	B = 0.16, Boot SE = 0.09, 95%CI [−.01, .36]
Associative empathy	B = 0.17, SE = 0.16, p = .292	B = 0.07, Boot SE = 0.09, 95%CI [−.12, .26]	B = 0.32, Boot SE = 0.12, 95%CI [.10, .58]	B = 0.15, Boot SE = 0.09, 95%CI [−.01, .34]

judgement and emotions towards Alex were more governed by interpersonal similarity. Taken together, the influence being nonlinear might suggest the degree of relevance is critical, which corresponds to related literature on social comparison and envy where schadenfreude is more likely to occur towards a relevant comparison target (Van Dijk et al., 2006).

Overall, we found reactions to others' misfortunes on social media were subject to both the social distance cue and message publicness. Specifically, both low-publicness and high-publicness of support-seeking messages can facilitate prosocial reactions and attenuate antisocial ones when the interpersonal similarity level between the message sender and message receiver varied, while moderate-publicness can amplify the discrepancy provoked by the social distance cue.

5.2. Implications

5.2.1. Theoretical implications

Theoretically, the current study contributes to understanding the impact of technology on outcomes of negative self-disclosure and support seeking by examining effects of two technological factors (i.e., social distance cue and message publicness) on crucial, yet understudied emotional and cognitive reactions on social media. To begin with, extending prior research on how homophily/heterogeneity entailed by existing relationships and identity influences individuals' reactions (Combs et al., 2009; Ouwerkerk et al., 2018), our findings suggest social distance cues can have salient impact on online interactions. Informed by the MAIN model (Sundar, 2008), technological affordances can trigger certain heuristics to help people make more intuitive decisions. For example, some technological affordances can be leveraged to activate similarity heuristics (Sundar, 2008) so as to effectively discourage antisocial reactions and elevate prosocial reactions in response to others' sufferings. The current study corroborates this such that cueing shorter social distance by a simple system-generated similarity index between the support seeker and the potential support provider can somewhat serve the same function as existing interpersonal relationships or group memberships.

Second, in this study we focused on the role of publicness in shortening psychological distance and enhancing intimacy. As suggested by the Traits as Situational Sensitivities Model (TASS, Marshall, 2002; Marshall & Brown, 2006), individual traits have most prominent effect on related responses in context with moderate-level of provocation. In the current study, moderate level of publicness might have characterized such moderate-level of provocation, where the self-other similarity with the social media user became most relevant and its effect became more pronounced. Findings in the current study also extends TASS such that not only individual traits can be seen as sensitivities to situational strength or provocation, but also interpersonal conditions (i.e., interpersonal similarity in the current study).

Third, going beyond merely regarding message publicness as the communication context being visible or not, the observed curvilinearity suggests that publicness has relational connotations that need to be taken into consideration. Specifically, on social media, different levels of publicness suggest different levels of directedness and relevance, which can charge audiences with different emotions and cognitions. That said, the absent main effect of publicness might also suggest alternative ways to theorize its effect. In reviewing relevant literature on message publicness abovementioned, we offered the possibility of considering the normative influence of publicness such that high publicness can denote public environment where certain behaviors are considered as less appropriate (Bazarova, 2012; Goffman, 1959; Liu & Wei, 2018). In this respect, message publicness might also set certain normative constraints for online social interactions to foster prosocial reactions. Therefore, research on message publicness might benefit from theorizing its meaning and effects from multiple perspectives to understand its role in online social interaction.

Altogether, our findings mapped how technology could alter

psychological closeness to influence message recipients' affective reactions and judgements towards message senders in online environment. Aside from message content characteristics such as verbal person-centeredness (Bodie et al., 2011), the current study further suggests technological affordances as contextual factors can also result in varied help-related reactions in online supportive communication. Hence, it is important to recognize the role of technology in online supportive communication.

5.2.2. Conceptual implications

Conceptually, we also endeavored to understand the ambivalent emotion—schadenfreude—more by operationalizing it in multiple ways, including self-report affect, self-report schadenfreude perception, and implicit self-esteem. We found that schadenfreude perception was significantly positively correlated with both positive and negative affect, and despite its stronger correlation with positive affect, schadenfreude perception was still accompanied with negative affect to some degree, which supported our aforementioned argument that schadenfreude should be understood as an ambivalent emotion.

Furthermore, consistent with prior research (Greitemeyer et al., 2010), schadenfreude perceptions were negatively correlated with empathy, but in a weak manner. It substantiated that schadenfreude and empathy should not be treated as the opposite of each other. Instead, they need be used together to capture the fuller picture of emotional reactions toward another's misfortune.

That said, inconsistent with Gao et al. (2014), we found elevated schadenfreude perception was negatively correlated with implicit self-esteem. Hence, more robust investigation is needed to illuminate the relaitonship between these two concepts.

5.2.3. Practical implications

Practically, our findings suggest that for users likely to engage in negative self-disclosures online, in order to avoid unintended effects such as inducing schadenfreude among the audience, they might need to set appropriate level of visibility and be aware of the composition of their audiences. Specifically, a message about personal misfortune should preferably target one's close others or be disseminated to the general public to reduce the chance of inducing message receiver(s)' schadenfreude and to enhance their empathy.

For developers of social media platforms, then, they can enhance homophily among users by incorporating features that facilitate in-group perceptions such as the similarity index used in the current study which shows how much similarity they share with each other. On the other hand, more flexible visibility/privacy settings could be developed to accommodate various needs in seeking support while transcending designated boundaries on social media.

6. Limitations and future work

Several limitations can be addressed in future studies. First, although we have faith in the randomization procedure to minimize influence exerted by participants' personal experience related to our selected issues (i.e., work, roommate, and finance), it would be better if we had measured such individual differences and statistically controlled for their effect. This is to be addressed in future research for more rigorous testing.

Second, the current study only tested one type of social distance cues that could by employed by social media platforms—the level of similarity between self and the other in terms of personal interests. Future work can further test social distance cues based on other individual and network characteristics such as demographics, political orientations, and values, etc., to examine the effectiveness of various social distance cues that might impact on one's affective and cognitive reactions to others' misfortunes.

Third, the present data refrained us from testing the normative influence exerted by message publicness. Thus, continuing research is needed to illuminate our understanding of publicness in the context of social media from the perspective of social norms. For instance, when a post is made visible to everyone, would message receivers refrain from expressing or even experiencing schadenfreude and sense of deservingness because these emotions and cognitions are less socially approved in public space?

Lastly, besides social distance cue and message publicness, there are many other social media affordances such as paralinguistic cues via "likes" and "favorites" (Hayes, Carr & Wohn, 2016), personalization/customization for tailored experience (Sundar & Limperos, 2013), anonymity to conceal identities (Fox, Cruz, & Lee, 2015) that might have implications for psychological closeness. Hence, scholars are encouraged to further investigate other technological factors that can potentially influence the elicitation and magnitude of schadenfreude, empathy, and perceived deservingness in response to support seeking on social media platforms to fully understand the role of social media in online social activities such as self-disclosure, support seeking, and community building.

7. Notes

1. In this study, the support-seeking messages also varied on the *explicitness* of seeking support which was manipulated by adding explicit statement of calling for help or not at the end of each message. This variable did not moderate any relationships proposed and therefore was not included in the analyses.

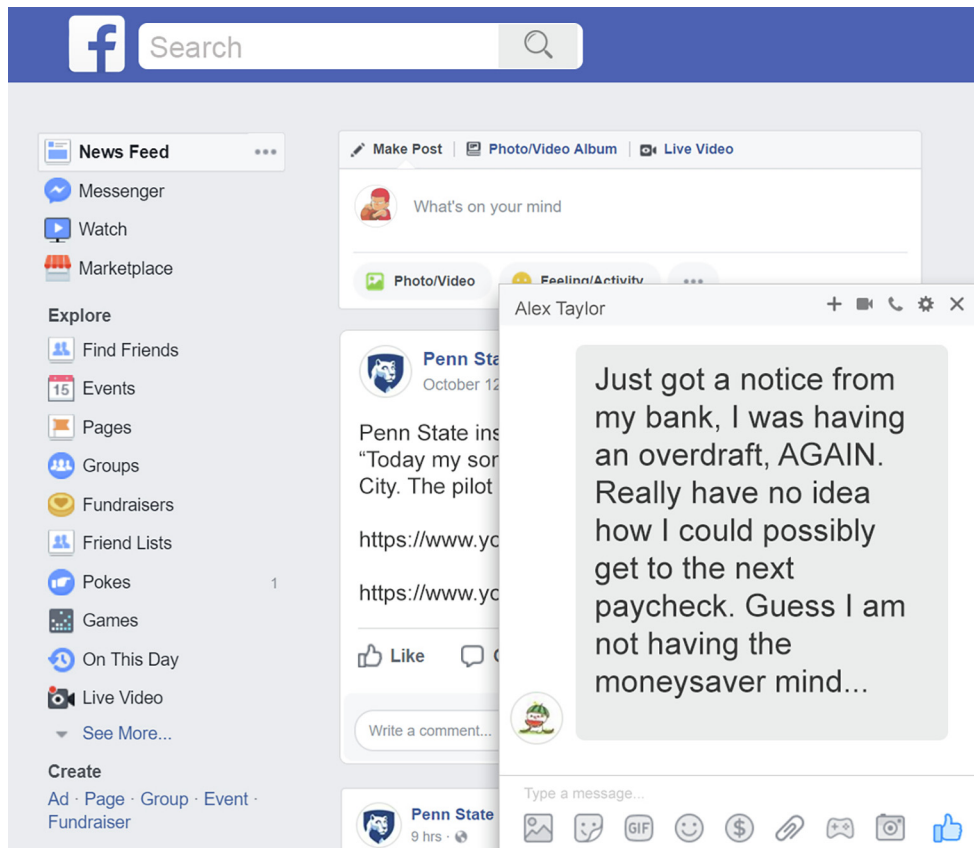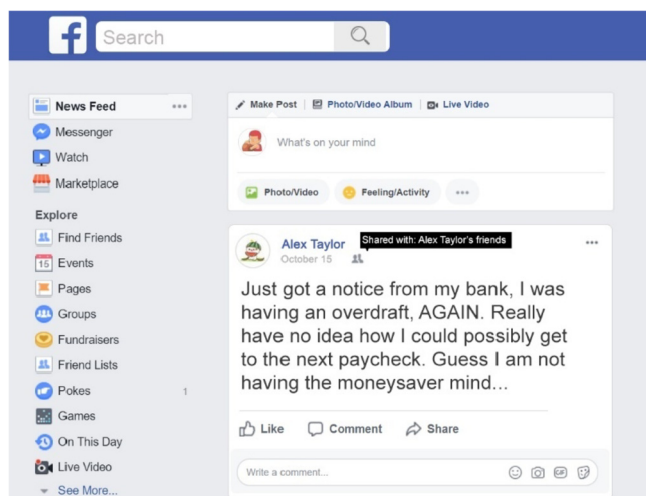## Disclosure statement

There is no financial interest or benefit that has arisen from the direct applications of this research.
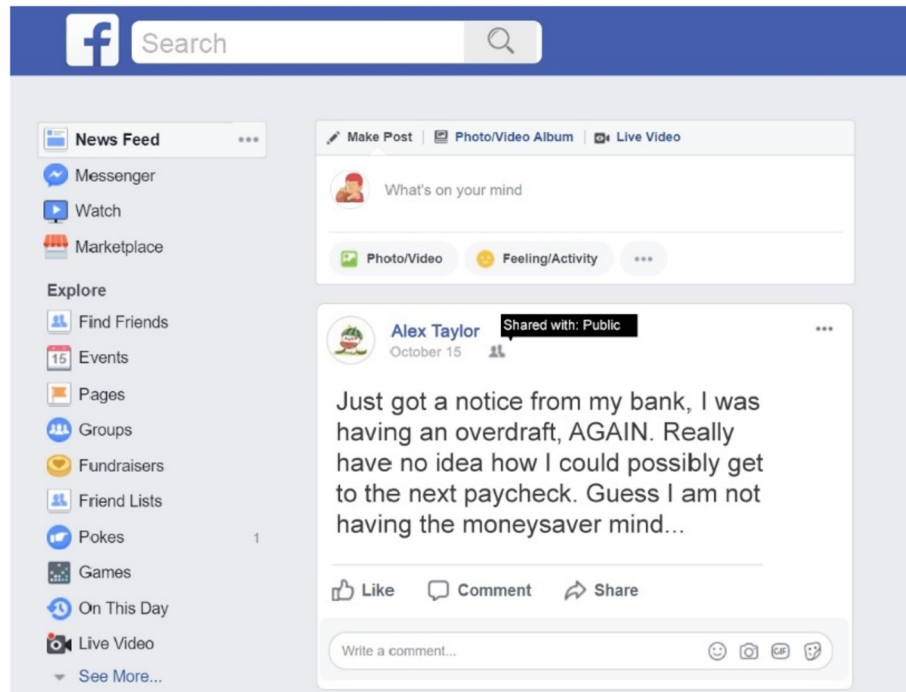
Appendix A. Manipulation of publicness

Private

Moderate

Public

f   Search   🔍

News Feed   •••
Messenger
Watch
Marketplace

Explore
Find Friends
Events
Pages
Groups
Fundraisers
Friend Lists
Pokes   1
Games
On This Day
Live Video
▾ See More...

✎ Make Post | 🖼 Photo/Video Album | 📹 Live Video

What's on your mind

🖼 Photo/Video   🙂 Feeling/Activity   •••

Alex Taylor   Shared with: Public   •••
October 15

Just got a notice from my bank, I was having an overdraft, AGAIN. Really have no idea how I could possibly get to the next paycheck. Guess I am not having the moneysaver mind…

👍 Like   💬 Comment   ↪ Share

Write a comment...   🙂 📷 GIF 😀

Appendix B. Message contents

Work

(Implicit version) Distressed about my current job situation. My supervisor seems to have a problem with me EVERY TIME I come up to him and ask questions about my work. Everything so far is just so frustrating!

(Explicit version) Help needed! Distressed about my current job situation. My supervisor seems to have a problem with me EVERY TIME I come up to him and ask questions about my work. Everything so far is just so frustrating! What can I do? Thoughts? Comforts?

Roommate

(Implicit version) My roommate has to go to bed 10 p.m. EVERYDAY. It's so frustrating that I have to be the one who always compromise and call it a day whenever my roommate wants to sleep!

(Explicit version) Help needed! My roommate has to go to bed 10 p.m. EVERYDAY. It's so frustrating that I have to be the one who always compromise and call it a day whenever my roommate wants to sleep! What can I do? Thoughts? Comforts?

Finance

(Implicit version) Just got a notice from my bank I was having an overdraft, AGAIN. Really have no idea how I could possibly get to the next paycheck. Guess I am not having the moneysaver mind …

(Explicit version) Help needed! Just got a notice from my bank I was having an overdraft, AGAIN. Really have no idea how I could possibly get to the next paycheck. Guess I am not having the moneysaver mind … What can I do? Thoughts? Comforts?

References

Aiello, L. M., Barrat, A., Schifanella, R., Cattuto, C., Markines, B., & Menczer, F. (2012). Friendship prediction and homophily in social media. *ACM Transactions on the Web, 6*(2), 9. https://doi.org/10.1145/2180861.2180866.

Anderson, A., Huttenlocher, D., Kleinberg, J., & Leskovec, J. (2012). Effects of user similarity in social media. *Proceedings of the Fifth ACM International Conference on Web Search and Data Mining* (pp. 703–712). . https://doi.org/10.1145/2124295.2124378.

Apsler, R., & Friedman, H. (1975). Chance outcomes and the just world: A comparison of observers and recipients. *Journal of Personality and Social Psychology, 31*(5), 887–894. https://doi.org/10.1037/h0076845.

Batson, C. D., Fultz, J., & Schoenrade, P. A. (1987). Distress and empathy: Two qualitatively distinct vicarious emotions with different motivational consequences. *Journal of Personality, 55*(1), 19–39. https://doi.org/10.1111/j.1467-6494.1987.tb00426.x.

Baym, N. K., & boyd, danah (2012). Socially mediated publicness: An introduction. *Journal of Broadcasting & Electronic Media, 56*(3), 320–329. https://doi.org/10.1080/08838151.2012.705200.

Bazarova, N. N. (2012). Public intimacy: Disclosure interpretation and social judgments on Facebook. *Journal of Communication, 62*(5), 815–832. https://doi.org/10.1111/j.1460-2466.2012.01664.x.

Bodie, G. D., Burleson, B. R., Gill-Rosier, J., McCullough, J. D., Holmstrom, A. J., Rack, J. J., et al. (2011). Explaining the impact of attachment style on evaluations of supportive messages: A dual-process framework. *Communication Research, 38*(2), 228–247. https://doi.org/10.1177/0093650210362678.

Bryant, E. M., & Marmo, J. (2012). The rules of Facebook friendship: A two-stage examination of interaction rules in close, casual, and acquaintance friendships. *Journal of Social and Personal Relationships, 29*(8), 1013–1035. https://doi.org/10.1177/0265407512443616.

Callan, M. J., Dawtry, R. J., & Olson, J. M. (2012). Justice motive effects in ageism: The

effects of a victim's age on observer perceptions of injustice and punishment judgments. *Journal of Experimental Social Psychology, 48*(6), 1343–1349. https://doi.org/10.1016/j.jesp.2012.07.003.

Callan, M. J., Ellard, J. H., & Nicol, J. E. (2006). The belief in a just world and immanent justice reasoning in adults. *Personality and Social Psychology Bulletin, 32*(12), 1646–1658. https://doi.org/10.1177/0146167206292236.

Carpenter, T., Pogacar, R., Pullig, C., Kouril, M., Aguilar, S. J., LaBouff, J. P., et al. (2018). Survey-based implicit association tests: A methodological and empirical analysis. PsyArXiv https://doi.org/10.31234/osf.io/hgy3z.

Cialdini, R. B., Schaller, M., Houlihan, D., Arps, K., Fultz, J., & Beaman, A. L. (1987). Empathy-based helping: Is it selflessly or selfishly motivated? *Journal of Personality and Social Psychology, 52*(4), 749. https://doi.org/10.1037/0022-3514.52.4.749.

Cikara, M., Botvinick, M. M., & Fiske, S. T. (2011). Us versus them: Social identity shapes neural responses to intergroup competition and harm. *Psychological Science, 22*(3), 306–313. https://doi.org/10.1177/0956797610397667.

Cikara, M., Bruneau, E., Van Bavel, J. J., & Saxe, R. (2014). Their pain gives us pleasure: How intergroup dynamics shape empathic failures and counter-empathic responses. *Journal of Experimental Social Psychology, 55*, 110–125. https://doi.org/10.1016/j.jesp.2014.06.007.

Combs, D. J. Y., Powell, C. A. J., Schurtz, D. R., & Smith, R. H. (2009). Politics, schadenfreude, and ingroup identification: The sometimes happy thing about a poor economy and death. *Journal of Experimental Social Psychology, 45*(4), 635–646. https://doi.org/10.1016/j.jesp.2009.02.009.

Correia, I., Vala, J., & Aguiar, P. (2007). Victim's innocence, social categorization, and the threat to the belief in a just world. *Journal of Experimental Social Psychology, 43*(1), 31–38. https://doi.org/10.1016/j.jesp.2005.12.010.

van Dijk, W. W., Goslinga, S., & van Hoek, T. (2004). Determinants of schadenfreude: The role of envy, deservingness, liking, justice & identification. *ISRE, 261* 2000.

van Dijk, W. W., van Koningsbruggen, G. M., Ouwerkerk, J. W., & Wesseling, Y. M. (2011). Self-esteem, self-affirmation, and schadenfreude. *Emotion, 11*(6), 1445–1449. https://doi.org/10.1037/a0026331.

Dovidio, J. F., Allen, J. L., & Schroeder, D. A. (1990). Specificity of empathy-induced helping: Evidence for altruistic motivation. *Journal of Personality and Social Psychology, 59*(2), 249–260. https://doi.org/10.1037/0022-3514.59.2.249.

Eisenberg, N., & Fabes, R. A. (1990). Empathy: Conceptualization, measurement, and relation to prosocial behavior. *Motivation and Emotion, 14*(2), 131–149. https://doi.org/10.1007/BF00991640.

Eklund, J., Andersson-Stråberg, T., & Hansen, E. M. (2009). "I've also experienced loss and fear": Effects of prior similar experience on empathy. *Scandinavian Journal of Psychology, 50*(1), 65–69. https://doi.org/10.1111/j.1467-9450.2008.00673.x.

Feather, N. T. (1993). The rise and fall of political leaders: Attributions, deservingness, personality, and affect. *Australian Journal of Psychology, 45*(2), 61–68. https://doi.org/10.1080/00049539308259120.

Feather, N. T. (1999). Judgments of deservingness: Studies in the psychology of justice and achievement. *Personality and Social Psychology Review, 3*(2), 86–107.

Feather, N. T. (2015). Analyzing relative deprivation in relation to deservingness, entitlement and resentment. *Social Justice Research, 28*(1), 7–26. https://doi.org/10.1007/s11211-015-0235-9.

Feather, N. T., & McKee, I. R. (2009). Differentiating emotions in relation to deserved or undeserved outcomes: A retrospective study of real-life events. *Cognition & Emotion, 23*(5), 955–977. https://doi.org/10.1080/02699930802243378.

Feather, N. T., McKee, I. R., & Bekker, N. (2011). Deservingness and emotions: Testing a structural model that relates discrete emotions to the perceived deservingness of positive or negative outcomes. *Motivation and Emotion, 35*(1), 1–13. https://doi.org/10.1007/s11031-011-9202-4.

Feather, N. T., & Nairn, K. (2005). Resentment, envy, schadenfreude, and sympathy: Effects of own and other's deserved or undeserved status. *Australian Journal of Psychology, 57*(2), 87–102. https://doi.org/10.1080/00049530500048672.

Feather, N. T., & Sherman, R. (2002). Envy, resentment, schadenfreude, and sympathy: Reactions to deserved and undeserved achievement and subsequent failure. *Personality and Social Psychology Bulletin, 28*(7), 953–961. https://doi.org/10.1177/014616720202800708.

Feather, N. T., Wenzel, M., & McKee, I. R. (2013). Integrating multiple perspectives on schadenfreude: The role of deservingness and emotions. *Motivation and Emotion, 37*(3), 574–585. https://doi.org/10.1007/s11031-012-9331-4.

Fong, C. T., & Tiedens, L. Z. (2002). Dueling experiences and dual ambivalences: Emotional and motivational ambivalence of women in high status positions. *Motivation and Emotion, 26*(1), 105–121.

Fox, J., Cruz, C., & Lee, J. Y. (2015). Perpetuating online sexism offline: Anonymity, interactivity, and the effects of sexist hashtags on social media. *Computers in Human Behavior, 52*, 436–442. https://doi.org/10.1016/j.chb.2015.06.024.

Frison, E., & Eggermont, S. (2015). The impact of daily stress on adolescents' depressed mood: The role of social support seeking through Facebook. *Computers in Human Behavior, 44*, 315–325.

Fultz, J., Schaller, M., & Cialdini, R. B. (1988). Empathy, sadness, and distress: Three related but distinct vicarious affective responses to another's suffering. *Personality and Social Psychology Bulletin, 14*(2), 312–325.

Gao, H., Cao, H., Xu, Y., Zhou, Y., Feng, Y., Wang, F., et al. (2014). Taking pleasure at another's misfortune: The implicit schadenfreude of disaster spectators. *Psychological Reports, 114*(2), 439–460.

Goffman, E. (1959). *The presentation of self in.* Butler: Bodies That Matter.

Greenier, K. D. (2015). Seeing you fall vs taking you down: The roles of agency and liking in schadenfreude. *Psychological Reports, 116*(3), 941–953. https://doi.org/10.2466/21.PR0.116k31w7.

Greenwald, A. G., & Farnham, S. D. (2000). Using the implicit association test to measure self-esteem and self-concept. *Journal of Personality and Social Psychology, 79*(6), 1022–1038.

Greitemeyer, T., Osswald, S., & Brauer, M. (2010). Playing prosocial video games increases empathy and decreases schadenfreude. *Emotion, 10*(6), 796–802. https://doi.org/10.1037/a0020194.

Halpern, H. M. (1955). Empathy, similarity, and self-satisfaction. *Journal of Consulting Psychology, 19*(6), 449.

Hayes, A. F. (2018). *Introduction to mediation, moderation, and conditional process analysis: A regression-based approach* (2nd ed.). New York: The Guilford Press.

Hayes, R. A., Carr, C. T., & Wohn, D. Y. (2016). One click, many meanings: Interpreting paralinguistic digital affordances in social media. *Journal of Broadcasting & Electronic Media, 60*(1), 171–187.

Jones, S. M., & Wirtz, J. G. (2006). How does the comforting process work? An empirical test of an appraisal-based model of comforting. *Human Communication Research, 32*(3), 217–243. https://doi.org/10.1111/j.1468-2958.2006.00274.x.

Kang, J., & Liu, B. (2018). You are better than me and yet I feel great! How a peripheral similarity cue switches the outcome of upward comparison on social media. *Presented at the 104th national communication association annual conference* (Salt Lake City, UT).

Kaptein, M., Nass, C., Parvinen, P., & Markopoulos, P. (2013). *Nice to know you: Familiarity and influence in social networks. System sciences (HICSS), 2013 46th Hawaii international conference on.* IEEE.

Kim, Y. W., & Gonzales, A. L. (2018). You don't know me: Negative self-views interact with publicness and feedback to shape interpersonal impressions online. *Computers in Human Behavior, 88*, 195–204. https://doi.org/10.1016/j.chb.2018.06.025.

Leach, C. W., Spears, R., Branscombe, N. R., & Doosje, B. (2003). Malicious pleasure: Schadenfreude at the suffering of another group. *Journal of Personality and Social Psychology, 84*(5), 932–943.

Leach, C. W., Spears, R., & Manstead, A. S. R. (2015). Parsing (malicious) pleasures: Schadenfreude and gloating at others' adversity. *Frontiers in Psychology, 6*https://doi.org/10.3389/fpsyg.2015.00201.

Lee, S., Winterich, K. P., & Ross, W. T., Jr. (2014). I'm moral, but I won't help you: The distinct roles of empathy and justice in donations. *Journal of Consumer Research, 41*(3), 678–696.

Lerner, M. J. (1980). The belief in a just world. *The belief in a just world* (pp. 9–30). Springer.

Lim, D., & DeSteno, D. (2016). Suffering and compassion: The links among adverse life experiences, empathy, compassion, and prosocial behavior. *Emotion, 16*(2), 175–182. https://doi.org/10.1037/emo0000144.

Liu, B., & Kang, J. (2017). Publicness and directedness: Effects of social media affordances on attributions and social perceptions. *Computers in Human Behavior, 75*, 70–80. https://doi.org/10.1016/j.chb.2017.04.053.

Liu, B., & Wei, L. (2018). Modeling social support on social media: Effect of publicness and the underlying mechanisms. *Computers in Human Behavior, 87*, 263–275. https://doi.org/10.1016/j.chb.2018.05.006.

Liviatan, I., Trope, Y., & Liberman, N. (2008). Interpersonal similarity as a social distance dimension: Implications for perception of others' actions. *Journal of Experimental Social Psychology, 44*(5), 1256–1269. https://doi.org/10.1016/j.jesp.2008.04.007.

Lydon, J. E., Jamieson, D. W., & Zanna, M. P. (1988). Interpersonal similarity and the social and intellectual dimensions of first impressions. *Social Cognition, 6*(4), 269–286.

Makela, K., Kalla, H. K., & Piekkari, R. (2007). Interpersonal similarity as a driver of knowledge sharing within multinational corporations. *International Business Review, 16*(1), 1–22.

Marshall, M. A. (2002). The traits as situational sensitivities (TASS) model: A more accurate way to predict behavior (Thesis). Retrieved from https://digital.lib.washington.edu:443/researchworks/handle/1773/8991.

Marshall, M. A., & Brown, J. D. (2006). Trait aggressiveness and situational provocation: A test of the traits as situational sensitivities (TASS) model. *Personality and Social Psychology Bulletin, 32*(8), 1100–1113. https://doi.org/10.1177/0146167206288488.

Marwick, A., & Ellison, N. B. (2012). "There isn't wifi in heaven!" negotiating visibility on Facebook memorial pages. *Journal of Broadcasting & Electronic Media, 56*(3), 378–400. https://doi.org/10.1080/08838151.2012.705197.

Ouwerkerk, J. W., Van Dijk, W. W., Vonkeman, C. C., & Spears, R. (2018). When we enjoy bad news about other groups: A social identity approach to out-group schadenfreude. *Group Processes & Intergroup Relations, 21*(1), 214–232.

Piskorz, J., & Piskorz, Z. (2009). Situational determinants of envy and schadenfreude. *Polish Psychological Bulletin, 40*(3), 137–144. https://doi.org/10.2478/s10059-009-0030-2.

Preece, J. (1999). Empathic communities: Balancing emotional and factual communication. *Interacting with Computers, 12*(1), 63–77.

Rogers, E. M., & Bhowmik, D. K. (1970). Homophily-heterophily: Relational concepts for communication research. *Public Opinion Quarterly, 34*(4), 523–538.

Rubin, Z., & Peplau, A. (1973). Belief in a just world and reactions to another's lot: A study of participants in the national draft Lottery1. *Journal of Social Issues, 29*(4), 73–93. https://doi.org/10.1111/j.1540-4560.1973.tb00104.x.

Sawada, M., & Hayama, D. (2012). Dispositional vengeance and anger on schadenfreude. *Psychological Reports, 111*(1), 322–334. https://doi.org/10.2466/16.07.21.PR0.111.4.322-334.

Shen, L. (2010). On a scale of state empathy during message processing. *Western Journal of Communication, 74*(5), 504–524. https://doi.org/10.1080/10570314.2010.512278.

Smith, R. H., Turner, T. J., Garonzik, R., Leach, C. W., Urch-Druskat, V., & Weston, C. M. (1996). Envy and schadenfreude. *Personality and Social Psychology Bulletin, 22*(2), 158–168. https://doi.org/10.1177/0146167296222005.

Solomon, R. C., & Stone, L. D. (2002). On "positive" and "negative" emotions. *Journal for the Theory of Social Behaviour, 32*(4), 417–435. https://doi.org/10.1111/1468-5914.

00196.

Spalding, L. R., & Hardin, C. D. (1999). Unconscious unease and self-Handicapping: Behavioral consequences of individual differences in implicit and explicit self-esteem. *Psychological Science, 10*(6), 535–539. https://doi.org/10.1111/1467-9280.00202.

Spears, R., & Leach, C. W. (2004). Intergroup schadenfreude: Conditions and consequences. *The Social Life of Emotions,* 336–355.

Stiff, J. B., Dillard, J. P., Somera, L., Kim, H., & Sleight, C. (1988). Empathy, communication, and prosocial behavior. *Communication Monographs, 55*(2), 198–213. https://doi.org/10.1080/03637758809376166.

Sundar, S. S. (2008). The main model: A heuristic approach to understanding technology effects on credibility. *Digital media, youth, and credibility* (pp. 73–100). Cambridge, MA: The MIT Press.

Sundar, S. S., & Limperos, A. M. (2013). Uses and grats 2.0: New gratifications for new media. *Journal of Broadcasting & Electronic Media, 57*(4), 504–525. https://doi.org/10.1080/08838151.2013.845827.

Taormina, R. J., & Messick, D. M. (1983). Deservingness for foreign aid: Effects of need, similarity, and estimated effectiveness. *Journal of Applied Social Psychology, 13*(5), 371–391.

Tesser, A., & Campbell, J. (1982). Self-evaluation maintenance and the perception of friends and strangers. *Journal of Personality, 50*(3), 261–279. https://doi.org/10.1111/j.1467-6494.1982.tb00750.x.

Tichon, J. G., & Shapiro, M. (2003). The process of sharing social support in cyberspace. *CyberPsychology and Behavior, 6*(2), 161–170.

Van Dijk, W. W., Ouwerkerk, J. W., Goslinga, S., Nieweg, M., & Gallucci, M. (2006). When people fall from grace: Reconsidering the role of envy in schadenfreude. *Emotion, 6*(1), 156–160. https://doi.org/10.1037/1528-3542.6.1.156.

Wang, S., Lilienfeld, S. O., & Rochat, P. (2019). Schadenfreude deconstructed and reconstructed: A tripartite motivational model. *New Ideas in Psychology, 52*, 1–11. https://doi.org/10.1016/j.newideapsych.2018.09.002.

Weiner, B. (1985). An attributional theory of achievement motivation and emotion. *Psychological Review, 92*(4), 548–573. https://doi.org/10.1037/0033-295X.92.4.548.