Effect of Envy on Intention to Cyberbully in Social Network Sites: Examining Two Competing Views

Bo Wen, Northern Arizona University, USA*
Paul Jen-Hwa Hu, University of Utah, USA
Chao-Min Chiu, National Sun Yat-sen University, Taiwan

https://orcid.org/0000-0003-2057-3829

ABSTRACT

Research analyzing the growing, worrisome phenomenon of cyberbullying in social network sites (SNSs) tends to adopt a cognitive perspective. This study instead investigates SNS envy, an essential emotion often experienced by users, and its relationship with cyberbullying intentions. The authors apply appraisal theory of emotion as a framework to conceptualize the effects of SNS envy, then propose two competing views: a direct effect premised in general strain theory and an indirect effect rooted in moral disengagement theory. The examinations of these competing views use survey data gathered from Facebook. The results support the indirect but not the direct effect, suggesting that envy influences cyberbullying intentions through moral disengagement. This study explicates how envious users rationalize their cyberbullying behaviors by cognitively reinterpreting existing perceptions of the advantages exhibited by envied others in a SNS, which reveals the importance of considering negative emotions to explain the unsettling cyberbullying phenomenon more fully.

KEYWORDS

Appraisal Theory of Emotion, Cyberbullying, General Strain Theory, Moral Disengagement Theory, SNS Envy

INTRODUCTION

Notwithstanding the enormous benefits of social network sites (SNSs), including Facebook and Instagram, their negative impacts have also begun attracting attention (Boroon et al., 2021; Sohaib, 2021). Cyberbullying entails intentional, aggressive online acts to hurt others by leveraging information technology, such as posting negative content, sharing maliciously false information, or disseminating hostile rumors (Lowry et al., 2016). In general, SNSs can facilitate and foster cyberbullying behaviors, as offenders can easily gain access to targeted victims and circumvent controls that otherwise would govern cyberbullying in conventional settings (Chan et al., 2019). Because of its immeasurably destructive or even devastating consequences, examining the formation of cyberbullying intention is important across many academic disciplines.

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*Corresponding Author

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Despite the noticeable efforts to analyze this unsettling phenomenon, the role of negative emotions remains understudied (Chan et al., 2021), thus call for more efforts to investigate “what negative emotions drive bullying behaviors on SNSs, and what are the underlying mechanisms,” and note that “Despite empirical evidence that individuals who developed certain negative affects [emotions] toward victims, such as jealousy and dislike, were more likely to become perpetrators, no studies have examined the role of affects in SNS bullying” (p. 9). In this regard, envy is crucial and can induce profound changes in human cognition and behavior (Cohen-Charash, 2009). Smith and Kim (2007) argue that envy is “an unpleasant, often painful emotion [is] characterized by feelings of inferiority, hostility, and resentment produced by an awareness of another person or group of persons who enjoy a desired possession” (p. 47), and therefore it can function as a critical prelude of efforts to cause interpersonal harm by dismissing others’ superiority to regain advantages and achieve emotional stability. The authors hence posit that individuals’ feelings of envy on SNSs are a crucial determinant of their cyberbullying intentions.

The authors define SNS envy as a negative emotion that a person, through the use of SNSs, feels when he or she absorbs social information about others who appear superior in some ways (Krasnova et al., 2015). They build on the appraisal theory of emotion (Lazarus, 1991) to conceptualize two probable effects of envy: a direct-effect view premised in general strain theory (Agnew, 1992), and an indirect-effect view rooted in moral disengagement theory (Bandura et al., 1996). The authors developed two hypotheses that center on these competing views and empirically tested them with survey data from 230 Facebook users. The results showed that SNS envy influences cyberbullying intention indirectly by distorting individuals’ perceptions of cyberbullying, consequences, and targets. Additionally, the authors examined envy intensity levels (i.e., high versus low), as well as the potential moderation of cyberbullying moral disengagement. The results showed that the indirect effect of SNS envy is robust across different intensity levels, and that moral disengagement does not moderate envy’s effect on cyberbullying intention, which renders further support for its mediating role.

LITERATURE REVIEW

Two streams of research are closely related to this study: SNS environments and user characteristics. The authors reviewed representative studies in each stream to elaborate on the gaps that motivated their investigation (see Online Appendix A).

One research stream aims at identifying SNS-specific factors that facilitate cyberbullying (Chan et al., 2019; Lowry et al., 2017). For example, anonymity on SNSs has attracted substantial attention, because it evokes cognitive changes that include diminishing perceived accountability (Lowry et al., 2017; Ooi et al., 2021). Also, affordances in SNS can serve as essential enablers of cyberbullying (Chan et al., 2019). Prior studies suggest that environmental factors can mitigate cyberbullies’ psychological concerns about “getting caught,” through cognitive reversals of the negative consequences of their harmful conduct. For example, people’s cyberbullying is a result of social learning, because an overarching goal of SNSs is to provide, promote, and enhance their interactions online (Lowry et al., 2016). If people establish close associations with deviant online others who exert negative impacts and encourage cyberbullying behaviors, they might adopt such behaviors by following a realignment of cyberbullying morality that otherwise would regulate unethical behaviors (Bastiaensens et al., 2016; Piccoli et al., 2020). Social learning in SNSs involves bystanders too (Anderson et al., 2014; You & Lee, 2019). Studies of cyberbullying bystander effects show that SNS cyberbullies easily distort the consequences of their harmful acts by spreading responsibility across larger groups of other users (Gahagan et al., 2016; Obermaier et al., 2016).

Another research stream investigates SNS user characteristics, such as SNS usage (Meter & Bauman, 2015; Peluchette et al., 2015), personality (Kokkinos et al., 2016), and victimization (Cao & Lin, 2015). In addition, individuals’ psychological needs are crucial and can influence their intentions and behaviors. Justifications of cyberbullying cite its ability to satisfy individual needs, such as...
gaining power or social approval (Gahagan et al., 2016). Human needs shape intrinsic motivations by evoking active reasoning and framing. To illustrate, personal encounters in SNSs that involve victimization likely increase the victim’s future cyberbullying intention (Cao & Lin, 2015), perhaps as an act of revenge. The fulfillment of needs internally nourishes individuals’ decisions to cyberbully others, leading them to construct cyberbullying intention as somewhat legitimate (Bowler et al., 2015; Hood & Duffy, 2018; Zhang & Leidner, 2018). Growing research examines the cyberbullying targets (victims) too (Chan et al., 2019). In general, people with less power (strength) are likely to become targets. While the power imbalance between an offender and a target can be established in different ways, Weber et al. (2013) argue that a common, convenient way for bullies to identify a suitable target on Facebook is to devalue that target. This devaluing perspective seems prevalent in SNSs (Runions & Bak, 2015). Victim blaming relates to the volume and valence of abusive posts on Facebook (Scott et al., 2019), and people engaging in frequent self-disclosures in SNSs are more likely to get targeted (Schacter et al., 2016).

The literature review reveals three important gaps. First, previous studies seldom investigate important negative emotions that influence cyberbullying intentions on SNSs, such as envy (Geng et al., 2022). Envy is a common negative emotion experienced by SNS users, as upward social comparisons are strongly facilitated and encouraged in SNSs (Krasnova et al., 2015). Unlike contexts in which envy is unwanted, SNSs and their users might collectively spread envy in implicit but effective ways, by encouraging individuals’ identification with and internalization of self-presentation norms that require the presentation of a “better” self (Meier & Schäfer, 2018; Wallace et al., 2017). Hence, the authors examined the role of SNS envy to acknowledge its importance and answer the call for examining negative emotions in cyberbullying research (Chan et al., 2021).

Second, few efforts explain how non-bullies become bullies by leveraging power differential mindsets. Particularly, the process people use to create a power imbalance in SNSs remains understudied (Lowry et al., 2016). Envy, as a negative emotion, could help explain how people reconstruct their cyberbullying power through cognitively overturning inferior (envy) positions to superior ones in SNSs.

Third, despite recent research, such as Geng et al. (2022), suggesting the provoking role of SNS envy in individual cyberbullying, the underlying mechanisms through which SNS envy could lead to cyberbullying, remain unclear (Chan et al., 2021). Toward that end, theory-based analyses and empirical tests of the effect mechanisms are needed. The authors thus not only theorize and empirically examine whether envious users would follow simple heuristics to decide whether to bully (hurt) others, but also specify the underlying mechanism through which envy on SNSs might determine a person’s cyberbullying intention.

THEORETICAL FOUNDATION

How SNS envy develops and leads to cyberbullying intention can be conceptualized with the appraisal theory of emotion (Lazarus, 1991). This theory suggests that people develop negative emotions toward online others through primary or secondary appraisals interactively. The former emphasizes a person’s evaluation of a threat based on the self-relevance of a social situation (e.g., achievements of similar others in a relevant domain), and the latter then assesses the level of controls the person has over the threat (e.g., abilities, resources).

The current literature suggests that the primary appraisal corresponds to three envy-invoking features of SNSs: superiority, similarity, and relevance (Krasnova et al., 2015). Superiority represents an SNS user’s likelihood of engaging in upward social comparisons. Specifically, SNSs enable and encourage people to present themselves positively, through features linked to user profiles (e.g., profile photo, workplace information), one-to-many communications (e.g., public sharing function), and “following” and “like” functions (e.g., counts of the number of likes and followers) (Meier & Schäfer, 2018). Similarity helps people identify others who appear in some way responsible for the threats
to their self-identity and thereby encourages social comparisons (Krasnova et al., 2015). Similarity can be amplified by SNSs, which by design aims to facilitate social interactions and interpersonal relationship developments through convenient access to others who share some commonalities and connections (e.g., having similar hobbies, attending the same school). Furthermore, envy relates to the relevance condition of a primary appraisal, in that SNSs can offer more relevant information that people regularly receive from others and that plausibly threatens a person in the domain salient to his or her own sense of proficiency (Krasnova et al., 2015). The timely dissemination and availability of information to connect others within a relevant domain is central to SNSs, as manifested in their content-sharing tools and easy access to frequent updates on newsfeeds. According to the appraisal theory of emotion, these features should prime and activate a primary appraisal, such that people form initial, envious feelings toward superior others in SNSs.

The secondary appraisal is more fuzzy and varied however, because “envy is a complex emotion, composed of various other emotions” (Meier & Schäfer, 2018, p. 2130), including dissatisfaction (Smith et al., 1988) and anxiety (Gold, 1996). According to appraisal theory of emotion (Beaudry & Pinsonneault, 2010), dissatisfaction, as a loss emotion, emerges from individuals’ total absence of control over challenging or threatening situations, however, anxiety, as a deterrence emotion, may arise if individuals perceived some (but not full) control over the situations. People may develop envious feelings regardless of whether they perceive control over the presented threat. This is also congruent with the existing literature (Van de Ven et al., 2009; Zizzo & Oswald, 2001) recognizing that envy can be invoked without evaluating personal abilities or consequences, because envious individuals not only could be keen to deprive advantaged others to improve themselves, but also might be willing to do so at their own expenses.

Accordingly, the negative emotions derived from the secondary appraisal can result in two different copings, problem-focused coping (PFC) versus emotion-focused coping (EFC), which are determined by whether people have control over the focal threat directly (Beaudry & Pinsonneault, 2010). With a PFC, people attempt to deal with the threatening situation by directly acting on the responsible event or target that caused the negative emotion. In contrast, EFC entails that people seek to divert their attention by making cognitive reinterpretations and adjustments to reassess the threatening situation, perhaps because of their inability to act directly.

Conceptually, PFC suggests a general, direct link between human emotion and behavior (e.g., IT use) (Beaudry & Pinsonneault, 2010); yet, the effect of negative emotion on cyberbullying requires further theorization. The authors thus turned to general strain theory (GST), which predicts that deviant behaviors might result from a person’s coping and dealing with the source of a negative emotion (Agnew, 1992). Take envy as an example, a person can immediately reduce or eliminate others’ apparent superiority by performing interpersonal harm (Lange et al., 2018; Wenninger et al., 2019). In this vein, envy is an antagonistic emotion, characterized by aversiveness and pain, so people take direct action and denigrate the advantaged, envied others to mitigate the pain (Takahashi et al., 2009). Because envy can evoke overwhelming threats to a person’s self-identity (Tai et al., 2012), envious individuals with sufficient resources and abilities might directly engage in aggressive behaviors to surpass others (e.g., hindering the target’s performance). This theoretical perspective supports the direct effect view of SNS envy on people’s intention to cyberbully, as presented in Figure 1.

However, leveraging PFC to explain cyberbullying may not depict the effect mechanisms through which envious individuals, who use SNSs to enrich their social lives, become bullies. The authors therefore, theorize an indirect effect of envy as well. According to the appraisal theory of emotion (Lazarus, 1991), individuals with negative emotions engage in EFC when they sense a lack of control, power, or resources to engage in PFC. Even if people initially do not seek cyberbullying for self-improvement, they could be prone to cyberbullying and thus attempt to reassess the situation from a different angle to divert their attention away from envious feelings, using such tactics as distancing, social support, or venting (Beaudry & Pinsonneault, 2010). However, attention diversions, designed to restore emotional stability, do not always produce positive outcomes. For example, shifting attention...
away from a focal envy situation might increase attention to inequality and injustice (Lazarus, 1991). Along this reasoning, cyberbullying may serve as an indirect means for people to act on their envious feelings, which implies the potential mediation of cognitive reinterpretation, prior to the intention to conduct deviant actions to resolve the negative emotion.

The authors used moral disengagement theory (MDT) to theorize about the probable cognitive reinterpretation implied by EFC (Bandura et al., 1996). This theory describes how individuals’ “inhibitive power,” which normally would prevent power abuses, can be alleviated by their reinterpretation, justifying, and reconstructing a social reality. People engage in cognitive reinterpretation processes to convince themselves of a surge in “the power to behave humanely” (Bandura, 1999, p. 194); consequently, regular moral norms or ethics that otherwise serve as internal regulators of their behaviors do not apply in some situations, and thus lead to wrongdoings. Prior research acknowledges the importance of moral disengagement as an operative mediator to link predictors with deviant behaviors, such as collective violence (Leidner et al., 2010), workplace delinquencies (Moore et al., 2019), and IT security policy violations (D’Arcy et al., 2014).

Bandura et al. (1999) identify eight moral disengagement processes: moral justification, euphemistic labeling, advantageous comparison, displacement of responsibility, disregard of consequences, attribution of blame, and dehumanization. These moral disengagement processes can help envious people refocus their attention on disqualifying advantaged others and thus rebuild their power to cyberbully with internal cognitive changes, in line with EFC. The consideration of power in MDT reflects the nature and reality of cyberbullying; that is, “bullies’ preference for weaker targets represents an attempt at obtaining an efficient cost versus benefit ratio, as weaker victims allow the bully to meet their goals (benefit) with only a modest chance of effective retaliation (cost)” (Volk et al., 2014, p. 332). To illustrate, people gain power by adopting a behavior that is associated with noble reasons (e.g., moral justification in MDT). The power to act also increases substantially if a person acts collaboratively with online others because doing so enables the diffusion of responsibility in MDT. As Figure 1 illustrates, the authors leveraged MDT as an appropriate, theoretical anchor to understand EFC, together with a general conceptualization of appraisal theory of emotion, to propose an indirect effect view of SNS envy on users’ cyberbullying intentions in SNS.

HYPOTHESES

According to the direct effect view shown in Figure 1, people engage in deviant behaviors as direct actions to counteract three types of strain associated with a negative emotion: “achieve positively valued goals, protect or retrieve positively valued stimuli, or terminate or escape from negative stimuli”
(Lazarus, 1991, p. 69). First, deviance can be a direct response to avoid undesirable consequences associated with negative emotion. Envy is an unpleasant emotion that causes pain and anxiety (Smith & Kim, 2007). To escape, envious individuals might “direct their frustration at envied [others] and seek ways to undermine their performance and outcomes” (Tai et al., 2012, p. 114). In this effort, cyberbullying (e.g., flaming, denigration, impersonation, exclusion) provides a convenient way for people to ease the pain and anxiety that results from their realization of others’ advantages.

Second, to eliminate the source of strain or challenge (e.g., the superiority of others), hurting the envied others verbally or behaviorally may lead to positively valued goals, in that it helps balance out a sense of inferiority. As Tai et al. (2012) explain, “one can try to undermine the position of the envied target and/or try to raise one’s position to the level of the envied target” (p. 110). Such direct responses are evident in the organizational literature, such as employees exhibiting envious reactions to recently promoted colleagues (Schaubroeck & Lam, 2004). To improve their relative position, people might seek to harm or bring down targeted others (Cohen-Charash & Mueller, 2007), such as through destructive gossip (Lange et al., 2018; Wenninger et al., 2019). These actions can lead to reestablished advantages over others, in support of the direct effect view that cyberbullying raises bullies’ own standing and self-presentation in SNSs.

Third, cyberbullying in SNSs might serve as a self-defense mechanism to protect positively valued stimuli. Envious people likely act directly without much deliberation. Unconscious self-defense is a direct effect of envy, independent of cognitive reasoning. Empirical evidence (Van de Ven et al., 2009; Zizzo & Oswald, 2001) suggests that envious people appear more willing to compromise their own benefits and endure more risk to make advantaged others suffer, which suggests the direct effect of SNS envy. Therefore, the authors hypothesize:

**H1:** A user’s envy in SNSs is directly associated with his or her cyberbullying intention.

As presented in Figure 1, the indirect effect view suggests that envious people divert their attention away from their initial realization of others’ advantages by distancing (e.g., exploring advantaged others’ disqualifications), seeking social support (e.g., gaining social approval to reject others’ advantages), or venting (e.g., attributing blame to discredit envied others), to mitigate their feeling of envy. Accordingly, the use of EFC involves an indirect effect of envy on cyberbullying, through moral disengagement that focuses on reconstructing, reinterpreting, and redistributing power. The reconstruction aspect involves moral justification, euphemistic labels, and advantageous comparison (Bandura, 1999). It offers a rationalization of the harmful behavior as benign, using legitimate reasons such as disqualifying the envied (advantaged) others. Moral justification is a mental process by which “detrimental conduct is made personally and socially acceptable by portraying it as serving socially worthy or moral purposes” (Bandura, 1999, p. 194). Envious people may engage in cyberbullying if they can establish plausible justifications for relaxing their internal moral controls; it is triggered by their negative emotions, not a conscious change to their personality, motivation, or morality (Harvey et al., 2017). Envious individuals no longer focus on the threats invoked by others’ advantages but instead shift their attention to perceived unfairness. Thus, their harmful behaviors might seem to represent an effective, less harmful way to restore equity (Smith & Kim, 2007). Through the process of moral justification, envious people begin to believe that cyberbullying others in SNSs is acceptable or “the right thing to do” to some extent.

Euphemistic labeling helps people reconstruct social reality by applying specific language to reshape the moral value of a deviant act (Bandura, 1999). Envious people could detach from the threat and realign with a general notion of respectable online activities by referring to their harmful acts as efforts to “retain justice” or “make things fair” (Runions & Bak, 2015). As a result, envious users in a SNS could excuse their interpersonal wrongdoings by granting them a noble label, rather than acknowledging their envy. As Bandura (1999) notes, reconstructing harmful conduct also requires external perspectives and advantageous comparisons with others.
In addition, actors might deem their harmful acts as minimally impactful, relative to other (more) detrimental behaviors. Envious SNS users tend to make such advantageous comparisons more frequently, due to their desire and motive to deny or reduce the advantages of the envied others through distancing in EFC. Moreover, laws against cyberbullying are still underdeveloped (Chan et al., 2019), so benchmark comparisons with serious crimes are easy to justify. In this sense, envious users in SNSs could justify their harmful actions by comparing them against more severe behaviors or crimes. Overall, the internal reconstruction of harmful conduct through justification, labeling, and advantageous comparisons should increase the likelihood that envious users engage in cyberbullying. They can regard their cyberbullying as socially acceptable by framing them as acts in service of higher-order needs, such as the need to establish a better image in SNSs to attract attention or maintain equal relationships with others.

With EFC, people also actively seek social support to establish and validate their observations of envied others. This reinterpretation aspect of moral disengagement comprises displacing, diffusing, and disregarding consequences, each of which offers means to distort the links between harmful behaviors and their consequences. Bandura et al. (1996) explain how the displacement of responsibility helps offenders reinterpret unethical conduct “as springing from the social pressures or dictates of others rather than as something for which they are personally responsible” (p. 396). When they repost, comment, or like friends’ posts, cyberbullies might appear as if they are not the actual agent of their behaviors and rather are just following friends (Lowry et al., 2016). For example, envious users might regard their cyberbullying as acceptable for the collective, because widespread envious feelings in SNSs indicate a community desire to impair advantaged others (Runions & Bak, 2015). However, quick and easy content-sharing tools in SNSs make it difficult for victims to trace the original creators (authors), so offenders can disseminate offensive materials without taking individual responsibility. This diffusion of responsibility entices envious users to see their harmful acts as collective decisions, such that their accountability seems attenuated. Through such cognitive reinterpretations, no single person is responsible for what happens to the victim (Lowry et al., 2016).

The social support that helps repudiate the self-relevant threat, recognized during the primary appraisal, also could allow the envious user to pay more attention to others who engage in similarly harmful behaviors to refute envied others’ advantages. Previous research identifies responsibility diffusion to cyberbullying bystanders (Piccoli et al., 2020), who escalate the situation by spreading harmful content. It is easier for envious users to deny personal responsibility for cyberbullying that occurs in a collective, especially if the consequences of their harmful actions are physically or temporarily remote (Runions & Bak, 2015). That is, envious people can minimize their perceptions of the negative consequences of their harmful actions if those consequences are difficult to trace back to them directly. The editability and anonymity of SNSs might particularly discourage people from taking responsibility for their cyberbullying acts, which distorts the negative consequence of acting unethically (Chan et al., 2019). Envious users potentially ignore the serious effects of their harmful actions, because their cyberbullying behaviors are indirect and asynchronous, with generally delayed effects. Then they can obscure the negative consequences with apparent justifications such as “it was just a joke” or “no one will get hurt” (Bandura, 1999).

Furthermore, venting relates to the retribution aspect of a cyberbullying moral disengagement mechanism and consists of the attribution of blame and dehumanization. Attribution of blame is a rationalization process through which “people view themselves as faultless victims driven to injurious conduct by forcible provocation” (Bandura et al., 1996, p. 366). Dehumanization is a moral exclusion process “that divests people of human qualities or attributes bestial qualities to them” (Bandura et al., 1996, p. 366). The features of SNSs can promote devaluing processes; for example, accessibility and retrieval capabilities help cyberbullies find and exploit a target’s vulnerability (Chan et al., 2019). Envious users in SNSs may leverage these processes because they want what superior others have achieved and tend to believe those envied others do not deserve their success, and thus develop no
empathy for the victim (Runions & Bak, 2015). In this vein, envious users in SNSs devalue advantaged others as a means to redefine their cyberbullying intention. The authors thus hypothesize:

**H2:** A user’s envy in SNSs is indirectly associated with his or her cyberbullying intention, through the mediation of cyberbullying moral disengagement.

**STUDY DESIGN**

To test the hypothesized direct versus indirect effect of envy, the authors’ surveyed Facebook users recruited from a university. They targeted Facebook because it is a dominant, general-purpose SNS and has a real name policy that helps control anonymity to some degree by requiring proof of identity to confirm the user’s name when necessary.\(^2\) We used a script to explain our objective and intended data analyses, and offered extra credit for completing the survey. Participant choice was made based on two considerations. First, as Chan et al. (2021) indicate, a significant portion of cyberbullying research “targeted children and students as their research samples because SNS bullying was most prevalent among children and teenagers. A few studies…investigated SNS bullying in adults’ contexts.” (p. 7). University students are adult students; they represent an important and unique SNS user population from which one can produce empirical evidence with generalizable insights for both adults and students. While this participant choice might be subject to the potential sample selection bias, the participants’ characteristics and their frequent use of SNSs allow extrapolation of the findings to other similar user populations. Second, the decision to study university students is in line with many representative cyberbullying studies that also target university students (Doane et al., 2014; Francisco et al., 2015; Gahagan et al., 2016; Kokkinos et al., 2016), which underscore the importance to examine cyberbullying by this user group, despite some inherent limitations.

In line with Lowry et al. (2017) and Zhang & Leidner (2018), the authors adopted a scenario-based method to solicit genuine responses from participants regarding their cyberbullying intentions in SNSs. Specifically, they reviewed representative previous studies and identified four common forms of cyberbullying: written-verbal, visual, spreading rumor, and exclusion (Menesini et al., 2012). Next, four scenarios from previously validated cyberbullying scenarios were adopted (Lowry et al., 2017), then each scenario was linked to one of the identified forms of cyberbullying in the survey. Finally, three experienced researchers reviewed scenarios to ensure their realism at face value and suggested wording refinements to fit the study context. In the survey, a randomly selected scenario was presented to each participant (see Online Appendix B).

The question items were adapted from previously validated scales, with minor wording changes appropriate to the study context. The authors measured SNS envy with six items from Krasnova et al. (2015). In line with extant MDT literature (Detert et al., 2008), the authors conceptualized cyberbullying moral disengagement as a second-order construct, comprised of eight fundamental dimensions that serve as first-order constructs, and measured it with 32 items adapted from Bandura et al. (1996). The authors employed previously validated two items to measure cyberbullying intention in accordance with extant literature (Lowry et al., 2017; Zhang & Leidner, 2018). Most question items adopted the 7-point Likert scales (1 = “strongly disagree” and 7 = “strongly agree”). Online Appendix C lists the measurement items and their sources. The authors included cyberbullying morality (Lowry et al., 2016) to control for each participant’s existing moral standpoint in the cyberbullying moral disengagement process. They also controlled the effect of scenario realism, or the extent to which a user deems the described behavior of a presented scenario would occur in real life, consistent with the existing literature (Lowry et al., 2017). Other control variables included the participant’s gender, age, number of friends on Facebook, and average daily usage of Facebook. These control variable choices are in line with several cyberbullying review articles, such as Chan et al. (2021) and Kowalski et al. (2014), which indicate that gender, age and technology use are important personal factors for cyberbullying. Both age and gender are often controlled when examining factors related to individual
cyberbullying (Chan et al., 2019; Hood & Duffy, 2018; Kwan & Skoric, 2013; Lowry et al., 2016). Moreover, the authors intended to examine cyberbullying in the context of SNS, so it was essential to control for the effect of technology use, which entails such aspects as SNS interactions and frequency of use. This decision was congruent with prior research. For example, Chan et al. (2019) consider the potential confounding effect of SNS usage, and Pabian et al. (2015) include both the number of Facebook friends and the average daily usage of Facebook in their study.

RESULTS

In total, 230 Facebook users completed the survey. As shown in Table 1, 43.0% of participants were female, average 21.6 years in age, approximately one-third spent more than one hour on Facebook daily and used Facebook to connect with more than 500 friends.

Measurement Model Test Results

Because the authors conceptualized cyberbullying moral disengagement as a second-order construct (Detert et al., 2008), they examined the measurement model with a twofold effort. First, they assessed all the first-order constructs in terms of their reliability, convergent and discriminant validity (Chin, 2009). After removing items with loadings lower than 0.70, they evaluated construct reliability in terms of Cronbach’s alpha, using the common threshold of 0.70. As presented in Table 2, the results show satisfactory construct reliability. For convergent validity, the authors examined the average variance extracted (AVE) with a common cutoff of 0.50. Each first-order construct in the measurement model exhibited appropriate convergent validity. Next, to test the first-order measurement model’s discriminant validity, they examined whether each item loads were at least 0.10 higher than its cross-loadings (Lowry & Gaskin, 2014). As the authors recapitulate in Online Appendix D, some moral

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<td>Gender: male versus female</td>
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<td>Age (standard deviation)</td>
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<td>Average time spent on Facebook daily</td>
<td>1-15 minutes: 22.2%</td>
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<td>Number of Facebook friends</td>
<td>1-100 friends: 17.4%</td>
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Note: CA = Cronbach’s alpha; AVE = average variance extracted; AB = attribution of blame; AC = advantageous comparison; DC = disregard of consequence; DFR = diffusion of responsibility; DPR = displacement of responsibility; DH = dehumanization; EL = euphemistic labeling; MJ = moral justification; EN = SNS envy; CM = cyberbullying morality; BI = cyberbullying intention.
disengagement items exhibit large cross-loadings with each other, signifying the potential discriminant validity concerns if one were to consider cyberbullying moral disengagement as eight first-order constructs (Wright et al., 2012). The results indicate the adequacy of conceptualizing cyberbullying moral disengagement as a second-order construct.

To ensure the appropriateness of cyberbullying moral disengagement as a second-order construct from an analytic perspective (Wright et al., 2012), we performed confirmatory factor analysis (CFA) to estimate a multidimensional model with eight first-order subconstructs, each corresponding to a dimension of cyberbullying moral disengagement. Common threshold values for the CFA model fit indices are employed, including $\chi^2/df < 3.00$, confirmatory fit index [CFI] > .90, and root mean error of approximation [RMSEA] < .08 (Hu & Bentler, 1999). Judged by these criteria, the second-order CFA model fits the data: $\chi^2/df = 2.08$, CFI = .93, and RMSEA = .07. These values affirm our conceptualization of moral disengagement as a second-order construct. We then reconstructed the initial measurement model and included cyberbullying moral disengagement as a second-order construct. As Table 3 shows, the second-order measurement model meets the common requirements for reliability, convergent and discriminant validity.

The authors also examined common method bias (CMB). First, they performed a CFA to assess the fit of a first-order factor model that included all the measurement items (Korsgaard & Roberson, 1995). The fit indices of this single-factor model indicate an inadequate fit: $\chi^2/df = 4.381$, CFI = 0.77, RMSEA = 0.12, thus signifying the insignificance of CMB. Second, they estimated CMB using the smallest positive correlation of items; namely, that between items EN-2 and DPR-3 (.002). In line with Lindell & Whitney (2001), and applied Fisher’s r-to-z transformation to the obtained correlation, then computed the 95% confidence interval (CI). The result contains 0: 95% CI = [-0.128, 0.132], indicating the absence of CMB. Third, they further tested CMB by adding a common latent factor (CLF) that connected to all observed items in the second-order measurement model (Podsakoff et al., 2003). The common variance, estimated by the square of CLF’s unstandardized regression weights, is 32.5%, indicating that the CLF cannot explain most of the variance in the data. Taken together, these results suggest CMB is not a serious concern.

**Hypothesis Test Results**

To test the hypotheses reflecting the two competing views of SNS envy’s effect on cyberbullying intention, the authors used covariance-based SEM (CB-SEM) in SPSS Amos to assess the structural model, at both model and path levels. This approach was appropriate for theory-based tests that focused on latent rather than manifest variables that could be evaluated by multiple regression analyses. Furthermore, CB-SEM generates detailed model fit indices appropriate for the model comparison intent. The model-level results indicated that the indirect effect outperformed the direct effect in terms of fit indices ($\chi^2/df$, RMSEA, CFI, standardized root mean square residual [SRMR]), as shown in Table 4.

**Table 3. Analysis results of the second-order measurement model**

<table>
<thead>
<tr>
<th>Variables</th>
<th>CR</th>
<th>AVE</th>
<th>CM</th>
<th>BI</th>
<th>EN</th>
<th>CMD</th>
</tr>
</thead>
<tbody>
<tr>
<td>CM</td>
<td>.81</td>
<td>.67</td>
<td>.82</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>BI</td>
<td>.90</td>
<td>.81</td>
<td>-.57</td>
<td>.90</td>
<td></td>
<td></td>
</tr>
<tr>
<td>EN</td>
<td>.85</td>
<td>.66</td>
<td>-.05</td>
<td>.18</td>
<td>.81</td>
<td></td>
</tr>
<tr>
<td>CMD</td>
<td>.98</td>
<td>.86</td>
<td>-.74</td>
<td>.78</td>
<td>.14</td>
<td>.93</td>
</tr>
</tbody>
</table>

*Note: CR = composite reliability; AVE = average variance extracted; CMD = cyberbullying moral disengagement; EN = SNS envy; CM = cyberbullying morality; BI = cyberbullying intention; the values representing the square roots of the AVEs are highlighted using bold text for emphasis.*
Comparative analyses also revealed larger path coefficients and greater significance levels for the indirect effect than the direct effect, suggesting its greater utility to explain cyberbullying intention. As shown in Table 4, the direct effect of envy is not statistically significant, so data do not support H1. Rather, SNS envy exhibits a significant, positive association with cyberbullying moral disengagement, which in turn affects cyberbullying intention in a significant and positive way, in support of H2. Among the control variables, scenario realism significantly affects individuals’ cyberbullying moral disengagement process, suggesting that their indicated behaviors in the presented scenarios reflect (mimic) real-world situations. The authors also observed a significant, negative relationship between cyberbullying morality and cyberbullying moral disengagement, indicating that envious users reshaped their morality to restore power. The effect of gender was also significant, signifying that female SNS users are less likely to cyberbully. None of the age, average hours spent on Facebook daily, or number of Facebook friends was statistically significant.

To scrutinize the indirect effect of cyberbullying moral disengagement, the authors also performed a bootstrap method with 2,000 resamples. The results showed SNS envy has a significant, indirect effect on users’ cyberbullying intention through cyberbullying moral disengagement (effect = 0.104, 90% CI = [0.037, 0.181]). In addition, a Sobel test was performed too (t = 2.786, p < .01), and the results were similar to those of the bootstrap method. The results, obtained from a representative sample of adult students, provided some valuable insights into the complex dynamics of cyberbullying on SNSs by revealing a significant indirect relationship in which SNS envy influenced individual cyberbullying intentions via the mechanism of moral disengagement.

Table 4. Comparative analysis of two competing views

<table>
<thead>
<tr>
<th>Comparison</th>
<th>Endogenous</th>
<th>Direct Effect (H1)</th>
<th>Indirect Effect (H2)</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Model-level (fit measures):</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>$\chi^2$/df</td>
<td>-</td>
<td>2.335</td>
<td>1.393</td>
</tr>
<tr>
<td>RMSEA</td>
<td>-</td>
<td>.076</td>
<td>.041</td>
</tr>
<tr>
<td>SRMR</td>
<td>-</td>
<td>.027</td>
<td>.019</td>
</tr>
<tr>
<td><strong>Path-level (exogenous):</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>EN</td>
<td>BI</td>
<td>.066</td>
<td>-</td>
</tr>
<tr>
<td>EN</td>
<td>CMD</td>
<td>-</td>
<td>.109**</td>
</tr>
<tr>
<td>CMD</td>
<td>BI</td>
<td>.849***</td>
<td>.864***</td>
</tr>
<tr>
<td><strong>Control variables:</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>CM</td>
<td>CMD</td>
<td>-.811***</td>
<td>-.806***</td>
</tr>
<tr>
<td>CM</td>
<td>BI</td>
<td>.059</td>
<td>.073</td>
</tr>
<tr>
<td>REAL</td>
<td>CMD</td>
<td>-.058</td>
<td>-.067</td>
</tr>
<tr>
<td>REAL</td>
<td>BI</td>
<td>.024</td>
<td>.030</td>
</tr>
<tr>
<td>Age</td>
<td>BI</td>
<td>.027</td>
<td>.028</td>
</tr>
<tr>
<td>Gender (male: female)</td>
<td>BI</td>
<td>-.118**</td>
<td>-.120**</td>
</tr>
<tr>
<td>Friends</td>
<td>BI</td>
<td>-.032</td>
<td>-.032</td>
</tr>
<tr>
<td>Time</td>
<td>BI</td>
<td>.029</td>
<td>.033</td>
</tr>
</tbody>
</table>

Note: Friends = number of friends on Facebook; Time = hours spent on Facebook daily; REAL = scenario realism; CMD = cyberbullying moral disengagement; EN = SNS envy; CM = cyberbullying morality; BI = cyberbullying intention.

***p < 0.001; **p < 0.01; *p < 0.05.
Additional Analyses

Two additional analyses help to clarify this indirect effect of envy. First, to establish the mediating role of cyberbullying moral disengagement more firmly, the authors checked whether they could rule out its potential moderation. Several studies (Moore, 2015; Samnani et al., 2014) predict plausible moderation by moral disengagement in various contexts, with the suggestion that the effects are likely context dependent. However, the interaction of SNS envy and cyberbullying moral disengagement is not statistically significant (effect = 0.034, \( p = 0.354 \)). One thus can rule out potential moderation by cyberbullying moral disengagement and instead affirm its mediating role.

Second, the authors considered whether the observed mediation effect might depend on the intensity of envy that people feel. That is, the magnitude of envy’s direct effect in the mediation model would be greater for people who feel more intense envy, despite the finding of indirect and an insignificant direct effect. In other words, in the mediation model, the indirect effect of envy on cyberbullying intentions could be attenuated among people who feel less intense envy. To test for this potential contingency, the authors used standardized envy values and split respondents into high- and low-intensity groups, according to the median of the standardized values. A \( \chi^2 \) difference test for the multigroup analysis revealed that the effects of envy on cyberbullying intentions in the mediation model (presence of a direct effect) were consistent across different intensity groups (\( \chi^2 = 1.473, p > 0.05 \)). The mediating relationship of envy with cyberbullying intentions was significant and robust across envy intensity levels.

DISCUSSION

The findings have several research implications. First, by examining SNS envy, this study offers an initial effort to document the elusive effect of this negative emotion on cyberbullying. The significant, indirect effect of SNS envy, together with its insignificant direct effect, informs future researchers to properly consider important mediating, contextual factors when investigating negative emotions and their effects on cyberbullying intentions. As the authors demonstrated, an envious user’s cyberbullying intention may not be a direct result of heuristics; rather, it is enabled by cognitive reinterpretations of cyberbullying. The findings thus invite more efforts to reexamine a common postulation in previous research and instead distinguish the heterogeneous paths by which envy exerts influence. For example, the use of SNSs tends to encourage an envy-provoking cyberbullying intention if a person feels unable to address or deal with envy threats.

Second, the indirect effect of SNS envy conveys the importance of envious users’ perceptions of power differentials. According to moral disengagement theory (Bandura, 1999), the intention to act immorally “is manifested in both the power to refrain from behaving inhumanely and the proactive power to behave humanely” (p. 193). With this view, the authors demonstrated that envious users’ cyberbullying intention can arise with a decrease in “inhibitive” power and an increase in “proactive” power (Bandura, 1999) through their reconstruction, reinterpretation, and retribution of the online social environment. The study results highlight the significance of power differentials for understanding how envious people leverage their cyberbullying power by undertaking internal rationalization. This insight may advance cyberbullying research by explicating and empirically testing power differences between envious users and envied others in SNSs, as well as specifying cyberbullying moral disengagement as a transformation mechanism that makes envious users feel more powerful and confident in their cyberbullying.

Third, the effect of SNS envy on cyberbullying appears mediated by cyberbullying moral disengagement, which potentially complements the appraisal theory of emotion. It shows how to integrate legitimacy reconstruction, consequence reinterpretation, and target devaluation to explore essential mechanisms of EFC, such as distancing, seeking social support, and venting (Beaudry & Pinsonneault, 2010). The findings may inform future efforts to categorize SNS envy in a finer-grained
way. For example, the appraisal theory of emotion emphasizes two types of negative emotion: loss manifesting a lack of control and deterrence implying sufficient control (Beaudry & Pinsonneault, 2010). According to the results, SNS users who feel envy possess less power to act directly on the associated strains. With deductive reasoning, one may consider SNS envy to be a loss emotion rather than a deterrence emotion, which would further establish its uniqueness and distinction from envy in other contexts (e.g., workplace).

The study results have implications for practice too. First, the envy that people experience on SNSs may not directly incite their intentions to cyberbully. This finding goes beyond a common belief that, by deploying algorithms to limit users’ exposure to envy-provoking content, an SNS could lower their likelihood to cyberbully. Interestingly, the finding further inform these attempts to control envy spread among SNS users. A fundamental challenge lies in the objective of many SNSs: to facilitate and foster social interactions via content sharing, even though some content might provoke and elevate envy, such as posts depicting luxurious lifestyles or enviable achievements. Yet, simplistic restrictions of envy-inducing content might not serve as an effective antidote to cyberbullying.

Second, the results underscore the significant role of moral disengagement in the relationship between SNS envy and cyberbullying. By and large, moral disengagements involve moral justification, euphemistic labeling, advantageous comparison, displacement of responsibility, diffusion of responsibility, disregard of consequences, attribution of blame, and dehumanization. These manifestations enlighten probable measures to mitigate cyberbullying, in combination with envy. For example, a SNS can alleviate envious users’ cyberbullying intentions through their moral justification, such that they no longer can rationalize their harmful behavior as serving a greater good. An exemplary measure is to expose users to the real-world consequences of cyberbullying behaviors, such as sharing real-life stories of those seriously hurt by cyberbullying (with the necessary anonymity) to help users understand the negative impact of similar actions. An SNS also can lessen euphemistic labeling, through which harmful actions cannot be sanitized by such softer language as “teasing” instead of “bullying.” This helps educate users about the meaning and probable consequences (e.g., harms) of cyberbullying. For instance, a help page is provided to compare euphemistic terms together with their actual implications, with an emphasis on these actions’ severity. Conceivably, envious users are likely to justify harmful actions by comparing them to worse behaviors (i.e., advantageous comparison). An SNS could prevent their cyberbullying intentions by implementing highly interactive “Quizzes of the Day” to debunk myths about “lesser” harmful behaviors. For envious users who tend to diffuse or displace their responsibilities for their actions, an SNS could introduce a technical feature to display their IP address that serves as a powerful reminder of accountability. For disregard of consequence, a platform could implement a feature that reminds them of the impact of their content and wording choices before posting, perhaps using a pop-up message box that appears when aggressive or inappropriate language are detected in a post or comment, together with a reminder stating that inappropriate actions can cause account suspension or other penalties. In addition, to counteract attribution of blame through which envious users blame the victim for inciting harmful behaviors, an SNS could implement stronger moderation policies and reporting features to regulate and prevent cyberbullying incidents. To address dehumanization in which envious users fail to recognize the humanity of others online, SNSs should encourage and promote empathy by implanting features that humanize users, such as prompting users of the real people behind each account when they share personal stories or photos. Jointly, these measures help mitigate users’ likelihood to engage in moral disengagement by reducing cyberbullying via heightened promotion of personal accountability, fostering empathy among them, and challenging rationalizations for harmful behaviors. By addressing these underlying mechanisms leading to moral disengagement, an SNS can inhibit the progression from envy to cyberbullying, and promote a more empathetic and responsible online community.
CONCLUSION

This study theorizes and empirically tests how individuals react to envious feelings, arising from their use of SNSs, both directly and indirectly. Building on a general conceptualization by appraisal theory of emotion, the authors complement prevalent, cognitive processing frameworks (e.g., risks, needs) and examine how envy influences cyberbullying intention. By testing two competing views of the relationship between envy and cyberbullying, they confirm that the effect of envy is funneled through cyberbullying moral disengagement, which helps envious users reconstruct their power to cyberbully superior and envied others in SNSs through justification, diffusion, and blaming mechanisms. The results advance the understanding of how envy, a negative emotion, can catalyze harmful behaviors by university students on SNSs. The authors also recognize the demographic profile of their university student sample in a unique socio-developmental junction between adolescence and full adulthood. Thus, cautions need to be taken when interpreting the results across different user populations. University students represent an appropriate user population for the authors’ intent to examine the direct versus indirect effect of envy in cyberbullying, yet thoughtful exploitations of the findings are needed to assess their applicability across diverse user groups. Overall, this study not only makes an important contribution to the existing body of knowledge on cyberbullying, but also underscores the need of further research to examine this worrisome phenomenon across other user populations and thereby broadens our understanding.

This study can be extended in several directions. For example, the authors examine individuals’ envy in SNSs; continued research should consider other negative emotions (e.g., SNS fear of missing out) provoked by their use. Additionally, the scenario-based design of this study might evoke subjective thinking in the responses that do not reflect actual reactions thoroughly. Additional data collection techniques should be employed to gather responses that are more genuine to sensitive topics as well. Moreover, this study regards envy as a stimulus to activate cognitive adjustment processes that eventually empower cyberbullying intention; future studies should broaden the scope by considering other user adaptations to depict their differential effects in a more detailed and complete manner. Last but not least, this analyses and results help better understand the prevalent cyberbullying among university students, but the choice of university students may be associated with some limitations. The authors thus advocate continued efforts to broaden this study’s scope and generalizability by examining the role of SNS envy in cyberbullying across diverse population groups that differ in country and cultural background. For example, comparisons can be made between working adults and university students, or between younger and older adults in different regions and countries. Results from such comparative investigations help depict cyberbullying more fully in a global sense and increases our understanding of this unsettling online phenomenon.

CONFLICT OF INTEREST

The authors state there is no known conflict of interest to disclose.
REFERENCES


ENDNOTES

1  Due to length requirement, online appendices appear after References.


3  In line with Podsakoff et al. (Podsakoff et al., 2003), we used CFA instead of Harman’s single factor technique as an initial test of CMB, because “confirmatory factor analysis (CFA) as a more sophisticated test of the hypothesis that a single factor can account for all of the variance in their data” (p. 889). As Korsgaard and Roberson (Korsgaard & Roberson, 1995) explain, the general assumption of this approach to CMB is “if method variance is a significant problem, a simple model (e.g., single factor model) should fit the data as well as a more complex model” (p. 663).
## APPENDIX A

### Representative cyberbullying studies

<table>
<thead>
<tr>
<th>Study</th>
<th>Focus</th>
<th>Method</th>
<th>Theory</th>
<th>Predictive Factors</th>
<th>Key Findings</th>
</tr>
</thead>
<tbody>
<tr>
<td>Kokkinos et al. (2016)</td>
<td>Survey</td>
<td>None</td>
<td>Offenders' personality and time spent on Facebook</td>
<td>Male Facebook users’ low agreeableness and high narcissism correlate significantly with their Facebook bullying behaviors.</td>
<td></td>
</tr>
<tr>
<td>Bowler et al. (2015)</td>
<td>Qualitative</td>
<td>None</td>
<td>Empathy</td>
<td>Seven cyberbullying prevention designs primarily counteract the lack of empathy in SNSs.</td>
<td></td>
</tr>
<tr>
<td>Cao &amp; Lin (2015)</td>
<td>Survey</td>
<td>None</td>
<td>Prior bullying victimization experience</td>
<td>SNS users with prior experiences being bullied are associated with cyberbullying behaviors.</td>
<td></td>
</tr>
<tr>
<td>Hood &amp; Duffy (2018)</td>
<td>Survey</td>
<td>None</td>
<td>Moral reasoning</td>
<td>The absence of empathy in cognitive processing plays motivates cyberbullying intention in SNSs.</td>
<td></td>
</tr>
<tr>
<td>Schacter et al. (2016)</td>
<td>Experiment</td>
<td>None</td>
<td>Self-disclosure valence</td>
<td>Facebook victims with high disclosure profiles are more likely to be blamed and receive social support for being cyberbullied.</td>
<td></td>
</tr>
<tr>
<td>Weber et al. (2013)</td>
<td>Experiment</td>
<td>None</td>
<td>Extroversion</td>
<td>Cyberbullying victims who are extroverts on Facebook are more likely to be blamed for cyberbullying incidents.</td>
<td></td>
</tr>
<tr>
<td>Dredge et al. (2014)</td>
<td>Survey</td>
<td>None</td>
<td>Self-presentation</td>
<td>Facebook users’ self-presentation behaviors are positively associated with higher frequency of cyberbullying victimization.</td>
<td></td>
</tr>
<tr>
<td>Peluchette et al. (2015)</td>
<td>Survey</td>
<td>Information processing theory</td>
<td>Victims’ personalities and risky SNS behaviors</td>
<td>Facebook users high on extroversion and openness are more likely to be victims of Facebook bullying.</td>
<td></td>
</tr>
<tr>
<td>Scott et al. (2019)</td>
<td>Experiment</td>
<td>None</td>
<td>Volume and valence of abusive posts on Facebook</td>
<td>SNS users are not likely to develop support for cyberbullying victims due to a victim-blaming mentality that downplays the incidents.</td>
<td></td>
</tr>
<tr>
<td>Zhang &amp; Leidner (2018)</td>
<td>Survey</td>
<td>Neutralization theory</td>
<td>Neutralization</td>
<td>Cyberbullying offenders’ neutralization increases their intention to cyberbully in the workplace, and such effect is moderated by publicity, invisibility, anonymity, and asynchrony.</td>
<td></td>
</tr>
<tr>
<td>Piccoli et al. (2020)</td>
<td>Survey</td>
<td>None</td>
<td>Peer influence</td>
<td>The cyberbullying intentions on SNSs are largely determined by peer influence about cyberbullying.</td>
<td></td>
</tr>
</tbody>
</table>

continued on following page
### Representative cyberbullying studies (cont.)

<table>
<thead>
<tr>
<th>Study</th>
<th>Focus</th>
<th>Method</th>
<th>Theory</th>
<th>Predictive Factors</th>
<th>Key Findings</th>
</tr>
</thead>
<tbody>
<tr>
<td>Bastiaensens et al. (2016)</td>
<td>SNS Environments</td>
<td>Survey</td>
<td>Theory of planned behavior</td>
<td>Social pressure</td>
<td>Social pressure mediates the effect of peer influence on SNS users’ intention to participate in cyberbullying.</td>
</tr>
<tr>
<td>Ooi et al. (2021)</td>
<td></td>
<td>Survey</td>
<td>Perceived anonymity</td>
<td></td>
<td>The anonymity of SNS users is an important factor to predict cyberbullying behaviors.</td>
</tr>
<tr>
<td>Lowry et al. (2017)</td>
<td></td>
<td>Survey</td>
<td>Control balance theory</td>
<td>Accountability and deindividuation</td>
<td>Lack of accountability and identification promotes cyberbullying.</td>
</tr>
<tr>
<td>Chan et al. (2019)</td>
<td></td>
<td>Survey</td>
<td>Crime opportunity theory</td>
<td>Technology affordance</td>
<td>Four SNS affordances (accessibility, information retrieval, editability, association) are crucial antecedents of the decision to cyberbully others.</td>
</tr>
<tr>
<td>Lee et al. (2017)</td>
<td></td>
<td>Survey</td>
<td>Online friendship networks</td>
<td></td>
<td>Number of friends is positively associated with cyberbullying.</td>
</tr>
<tr>
<td>Obermaier et al. (2016)</td>
<td></td>
<td>Experiment</td>
<td>Number of bystanders</td>
<td></td>
<td>More bystanders cause increased cyberbullying incidents, due to diffusion of responsibilities on SNSs.</td>
</tr>
<tr>
<td>You &amp; Lee (2019)</td>
<td></td>
<td>Experiment</td>
<td>Anonymity of bystanders</td>
<td></td>
<td>The anonymity of bystanders is associated with more SNS cyberbullying interventions.</td>
</tr>
<tr>
<td>Lowry et al. (2016)</td>
<td></td>
<td>Survey</td>
<td>Social learning theory</td>
<td>Social learning</td>
<td>SNS users have abilities to learn and imitate other cyberbullying offenders.</td>
</tr>
<tr>
<td>Gahagan et al. (2016)</td>
<td></td>
<td>Qualitative</td>
<td>Bystanders’ circumstantial responsibility</td>
<td></td>
<td>Most bystanders on SNSs are unwilling to intervene in witnessed cyberbullying incidents, because they have no responsibility.</td>
</tr>
<tr>
<td>Anderson et al. (2014)</td>
<td></td>
<td>Experiment</td>
<td>Dissenter effect</td>
<td></td>
<td>Bystanders in Facebook are more supportive to victims in dissenting conditions.</td>
</tr>
<tr>
<td>Geng et al. (2022)</td>
<td></td>
<td>Survey</td>
<td>Social comparison theory</td>
<td>SNS envy, body satisfaction, social comparison orientation</td>
<td>SNS envy can mediate the effect of social comparison orientation on cyberbullying perpetration.</td>
</tr>
<tr>
<td>This study</td>
<td>Negative Emotions in SNSs</td>
<td>Survey</td>
<td>Appraisal theory of emotion, augmented with general strain theory and moral disengagement theory</td>
<td>SNS envy and its underlying mechanism</td>
<td>SNS envy indirectly affects cyberbullying intention through the full mediation of cyberbullying moral disengagement, instead of affecting the intention directly.</td>
</tr>
</tbody>
</table>
APPENDIX B

Cyberbullying Scenarios in SNSs

Scenario 1: Hurtful Comment

Tom and Kevin were two undergraduate students who were selected for highly competitive paid summer internship positions in a prestigious company. Both of them knew well that the company would offer a fantastic full-time position to one of them. Tom worked extremely hard during the internship but did not get the position at the end. Until recently, Tom was oblivious to a Facebook page that was anonymously created to humiliate him publicly. Known for his strong political views, Tom just learned from a close friend about this Facebook page that was directed toward him because of his view on abortion. In the comment section of this page, many individuals posted explicit, maliciously altered pictures of him, and accused him of being a pedophile and his family engaging in incest. This page also revealed public information that is true, but Tom had kept private, including his home address, his work address, incendiary political comments he has made about abortion, his salary, the names and birth dates of his children, and his college transcripts. After complaining to Facebook and investing this page further himself, Tom discovers that Kevin is behind all of these. Tom requested the company to investigate this issue, but his request was denied. Even though he knows it’s the wrong thing to do, Tom intentionally posts several extremely negative and hurtful messages on Kevin’s Facebook wall.

Scenario 2: Malicious Photograph

Tom is part of a team working on a class project that must be completed soon for extra course credit. The team members use Facebook to communicate, coordinate, and collaborate. Most of the team members need the extra credit in order to get a passing grade in the class. However, Kevin has good standing in the class and is the only person on the team who does not need the extra credit. Kevin missed nearly all important project meetings, which makes all other members extremely upset. Even worse, Kevin posted a comment under their University Facebook page to accuse Tom of being a cheater on the midterm exam. Hundreds of students, many of whom did not know Tom personally, continued to harass him on Facebook. Tom is currently under scrutiny by the university and most likely could fail the class. Even though he knows it’s the wrong thing to do, Tom decides to send a maliciously altered photograph of Kevin to his Facebook messaging inbox with thousands of spam messages.

Scenario 3: Spreading Rumor

Lisa has struggled with her self-image and weight throughout her early teen years. Although there is nothing wrong with her weight and appearance, Lisa is totally convinced that she is fat and not smart. Lisa has lived in her Atlanta neighborhood for the past three years; many girls in the neighborhood have shunned and teased her because of her ethnicity and religion. Their mean behavior has gotten worse at school. She feels like she does not belong there and has lately been very depressed, not wanting to go to school at all. The last straw occurs when the neighborhood ringleader of the mean girls sends several private messages to Lisa on Facebook, telling her that she is fat and ugly and should just kill herself. Even though she knows it’s the wrong thing to do, Lisa creates several fictitious accounts on Facebook and begins to post a large number of obscenities and vulgarities directed to each of the mean girls’ Facebook page.

Scenario 4: Social Exclusion

Tom is a sales associate in a real estate company. Tom is very frustrated with his new client developments, because most of his clients would not sign the contract with him after the first meeting. Even worse, Tom continues losing a large number of clients to other sales associates in the company. Recently, Tom discovered that his colleague, Tyler who sits right next to the printer, has been secretly looking over important client development summary notes and reports that Tom prints. Tyler frequently...
reads things that others print to gain essential sales information. Furthermore, Tyler often looks at the sticky notes that Tom attaches to his computer and work area for client information and meeting notes. Thus, Tyler would know the new clients that Tom has and grabs many of the clients from him. Tom knew something was going on and later discovered that Tyler was also spreading embarrassing photos of Tom and untrue information to slander Tom on Facebook. Even though he knows it’s the wrong thing to do, Tom takes photos of Tyler waiting for printing and sends Facebook group message to everyone in the company, except for Tyler. In the group message, Tom asserts that Tyler has been stealing others’ clients by malicious means and warns that Tyler is doing this to at least five other sales associates and urges all of them to be very careful of their files and be very wary of Tyler.
APPENDIX C

Measurement Items

Demographic Variables

Age: Please enter your age (years old)
Gender: Please select your gender (Male/Female)
Daily Hours Spent on Facebook: On average, how many hours a day do you use Facebook? (0 minutes, 1 to 15 minutes, 16 to 30 minutes, 31 to 60 minutes, > 1 hour <= 2 hours, > 2 hours)
Number of Friends on Facebook: Approximately, how many friends do you have on your Facebook account? (none, <= 100 friends, 101 to 300 friends, 301 to 500 friends, 501 to 700 friends, > 700 friends)
Scenario Realism: To what degree do you think that acts like this (described in the scenario) occur in real life?

SNS Envy (EN) (Krasnova et al., 2015)
EN-1: It is somewhat annoying to see how successful some of my Facebook friends are.
EN-2: It is somewhat disturbing to see how popular some others are on Facebook.
EN-3: It is somehow disturbing when I see on Facebook how many fancy things others can afford.
EN-4: When using Facebook, I often feel that most of my Facebook friends are doing better than me. [Dropped]
EN-5: When using Facebook, I often feel that the posts of my Facebook friends get more attention (e.g., “likes,” comments, followers) than mine. [Dropped]
EN-6: I don’t know why, but I usually seem to feel myself as an underdog on Facebook. [Dropped]

Cyberbullying Intention (BI) (Lowry et al., 2017)
BI-1: I could see myself engaging in similar behavior if I were in [the main character]’s situation.
BI-2: The likelihood that I would do the same as [the main character] did in that situation is high.

Cyberbullying Morality (CM) (Lowry et al., 2016)
CM-1: From a moral view, [the main character]’s behavior is morally unacceptable.
CM-2: From an ethical perspective, [the main character]’s behavior is against my moral beliefs.

Moral Justification (MJ) (Bandura et al., 1996)
MJ-1: It is ok for one to do what [the main character] did under circumstances where it seems like there is no other choice.
MJ-2: It is ok for one to do what [the main character] did to someone who threatens his well-being/interests.
MJ-3: It is acceptable for one to do what [the main character] did if it helps solve the problem more effectively.
MJ-4: It is fair for one to do what [the main character] did if it helps protect himself/herself.

Euphemistic Labeling (EL) (Bandura et al., 1996)
EL-1: What [the main character] did is simply a way of expressing himself.
EL-2: What [the main character] did is just a way to make things fair.
EL-3: What [the main character] did is merely a way to give people a lesson.
EL-4: What [the main character] did is really the reality in cyberspace. [Dropped]
Advantageous Comparison (AC) (Bandura et al., 1996)
AC-1: What [the main character] did is no big deal when people are beating up others in real life.
AC-2: It is fine to do what [the main character] did because beating others is worse.
AC-3: Compared to many illegal things that people do, what [the main character] did is not serious. [Dropped]
AC-4: What [the main character] did is not too serious in comparison to those who conduct felony in real life. [Dropped]

Displacement of Responsibility (DPR) (Bandura et al., 1996)
DPR-1: Facebook users like [the main character] cannot be blamed for such behaviors if he/she was intimidated by other people.
DPR-2: If Facebook does not prohibit such behaviors, users like [the main character] should not be condemned for it.
DPR-3: Facebook users like [the main character] should not be criticized for such behaviors when Facebook does not offer effective solutions to deal with the problem.
DPR-4: Facebook users like [the main character] should not be sanctioned for such behaviors if others pressured him/her to do them. [Dropped]

Diffusion of Responsibility (DFR) (Bandura et al., 1996)
DFR-1: Facebook users like [the main character] cannot be incriminated for such behaviors because many factors lead to these actions.
DFR-2: It is unfair to indict Facebook users like [the main character] for such behaviors when many others do the same.
DFR-3: It is unreasonable to reprimand Facebook users like [the main character] for such a behavior because users have limited responsibility for regulating these behaviors.
DFR-4: If a group of Facebook users decides together to engage in such a behavior (e.g. what [the main character] did), it is inconsiderate to punish anyone in the group for it.

Disregard of Consequences (DC) (Bandura et al., 1996)
DC-1: What [the main character] did really won’t hurt anyone.
DC-2: What [the main character] did does not really do any harm.
DC-3: What [the main character] did creates no direct damage to others on Facebook.
DC-4: Others on Facebook do not mind [the main character]’s act because it causes no loss to them. [Dropped]

Attribution of Blame (AB) (Bandura et al., 1996)
AB-1: Facebook users like [the main character] are not at fault for such behaviors if others mistreat them.
AB-2: Facebook users like [the main character] are not guilty for such behaviors if someone did the same thing to them in the first place.
AB-3: Facebook users who get mistreated by what [the main character] did often do things that deserve it. [Dropped]
AB-4: If people are not taking any preventive measures (e.g., block message, report abusive content function on Facebook) to protect themselves from [the main character]’s act, it is their own mistake if they get hurt. [Dropped]
Dehumanization (DH) (Bandura et al., 1996)

DH-1: What [the main character] did is fine because some Facebook users lack consideration for others.
DH-2: It is acceptable to do what [the main character] did to someone who behaves like a “worm” on Facebook.
DH-3: It is fair to do what [the main character] did to someone who behaves like a snob on Facebook.
DH-4: It is reasonable to do what [the main character] did to someone who does not deserve to be treated like a human being.
### APPENDIX D

#### Summary of cross-loadings

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Note: AB = attribution of blame; AC = advantageous comparison; DC = disregard of consequence; DFR = diffusion of responsibility; DPR = displacement of responsibility; DH = dehumanization; EL = euphemistic labeling; MJ = moral justification; EN = SNS envy; CM = cyberbullying morality; BI = cyberbullying intention.
Bo Wen is an assistant professor in the W.A. Franke College of Business at Northern Arizona University. He received his Ph.D. from David Eccles School of Business at University of Utah. His current research interest is mainly focused on how gamification and peer gifting motivate user-generated contents in online communities. He is also interested in research topics related to current issues of technology uses, such as e-learning, issues in technology use, and cybersecurity. His work has appeared in the ACM Transactions on Management Information Systems and Journal of Education for Business, among others.


Chao-Min Chiu is a professor in the Department of Information Management at the National Sun Yat-sen University, Taiwan (ROC). He holds a PhD in management from the Rutgers University. His research interests include electronic commerce, virtual communities, and information technology adoption. His research has appeared in Journal of the Association for Information Systems, Decision Support Systems, European Journal of Information systems, Information Systems Journal, Information & Management, International Journal of Human-Computer Studies, International Journal of Information Management, Computers & Education, Electronic Commerce Research and Applications, Information Technology & People, and others.