Cyberbullying on Social Networking Sites:

The Crime Opportunity and Affordance Perspectives

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ABSTRACT

Cyberbullying on social networking sites (SNS bullying) is an emerging societal challenge related to the undesirable use of technologies. To address the research gaps identified in the literature, we draw on crime opportunity theory and the affordance perspective to propose a meta-framework that guides our investigation into SNS bullying. The meta-framework explains how SNS affordances give rise to the evaluation of favorable SNS environmental conditions for SNS bullying, which, in turn, promote SNS bullying. The research model was empirically tested using a longitudinal online survey of 223 SNS users. The results suggest that the evaluation of SNS environmental conditions predict SNS bullying, and SNS affordances influence the evaluation of these environmental conditions. This work offers a new theoretical perspective to study SNS bullying, highlighting the critical impacts of environmental conditions in shaping such behavior. It also provides SNS developers with insights into measures that combat SNS bullying.

Key Words and Phrases: cyberbullying, SNS bullying, crime opportunity, affordance, social networking sites, meta-framework, societal impacts of technology use.

Introduction

Social networking sites (SNSs) have become increasingly popular vehicles for individuals to communicate with their friends and family, anytime and anywhere. Despite their promising potential for online social interactions, SNSs are also ripe for abuse because they provide perpetrators with an ideal venue for cyberbullying—in other words, for harassing, threatening, and exploiting potential targets [1]. *Cyberbullying on social networking sites* (SNS bullying) refers to any form of aggressive behavior on SNSs conducted by a group or an individual, repeatedly and over time, against targets who cannot easily defend themselves [88].

SNS bullying is a relatively recent phenomenon; however, researchers have already devoted much attention to reporting and documenting its prevalence and the adverse consequences associated with it. The Pew Research Center [74] found that 40% of Internet users had experienced cyberbullying. Facebook has been found to be the most common venue for SNS bullying: 54% of Facebook users reported that they have experienced cyberbullying on Facebook

[37]. Previous research has demonstrated that SNS bullying incidents have adverse consequences for victims [e.g., 91], such as depression, anxiety, low self-esteem, substance abuse, and in extreme cases, self-harming behaviors and suicide attempts. Frequent news headlines reporting suicide cases linked to SNS bullying document the severity of this problem, including, for example, the recent case of an eighteen-year-old girl who shot herself dead in front of her family after being relentlessly bullied for her weight on Facebook [40].

Given its adverse consequences on individuals and society, SNS bullying has not surprisingly become an important and emerging research topic across disciplines. With roots in psychology, education, and public health research, most studies have focused on individual traits and characteristics that lead to SNS bullying (or to cyberbullying in general) [see 39, 47, for a review]. However, the research into SNS bullying is still emerging in the information systems (IS) discipline. Only recently Lowry et al. [56] drew on social learning theory to examine how social media anonymity affects adults' engagement in SNS bullying. In general, there have been few investigations into the phenomenon within the IS discipline. How SNS, as a form of new information technology, shapes and fosters cyberbullying remains relatively unexplored from a technological perspective.

Understanding SNS bullying from a technological perspective is vital in order to shed light onto new measures that may effectively combat this emerging societal challenge, given that existing research has mostly focused on identifying individual characteristics associated with SNS bullying. Indeed, numerous social science theories, such as social cognitive theory and crime opportunity theory, have stressed the importance of the environment in shaping human behaviors. Neglecting the environmental component in SNS bullying research could be potentially dangerous because this produces a lopsided view into the causes of the phenomenon.

Accordingly, our study aims to advance the scientific understanding of cyberbullying by developing a meta-framework that explains how SNS affordances and the evaluation of favorable SNS environmental conditions influence SNS bullying. We use crime opportunity theory [30] to explain SNS bullying, considering both the perpetrator characteristic and SNS environmental conditions that offer the criminogenic opportunities. We further adopt the affordance perspective [63] to delineate how SNS affordances give rise to such a favorable evaluation of the environmental conditions for SNS bullying. We endeavor to answer two primary research questions:

1. *What are the key environmental conditions driving SNS bullying?*
2. *How do SNS affordances influence the evaluation of SNS environmental conditions for SNS bullying?*

This work responds to calls for research on the societal impacts of technology use [e.g., 61, 94] and contributes to theory and practice in three distinct ways. First, this work advances the scientific knowledge of cyberbullying by investigating how the SNS environment drives SNS bullying from the crime opportunity perspective. We test how presence of suitable targets and absence of capable guardianships affected SNS bullying and explore how the favorable evaluation of such environmental conditions intensified one's inclination to bully and SNS bullying.

Second, this work enriches the IS literature by examining how users interpret SNSs and the resultant undesirable behaviors from the affordance perspective. We test four SNS affordances (i.e., accessibility, information retrieval, editability, and association) that influence perpetrators' evaluation of SNS environmental conditions for SNS bullying. Although prior research has focused on the positive connotation of SNS affordances, our work breaks new ground for the study of unintended and negative acts afforded by the SNSs.

Finally, for practitioners, the findings of this work could provide insights into how to effectively combat SNS bullying. Based on the empirical results, SNS developers could prioritize resources to rectify the criminogenic environmental conditions that exacerbate SNS bullying. Meanwhile, government agencies could launch campaigns to educate users on the appropriate use of SNSs. Together, the findings of this work offer a more proactive approach to tackle cyberbullying and maintain a healthy social networking environment.

Theoretical Background

Definition of Cyberbullying

Cyberbullying is a new form of bullying that involves the use of technology. Different terminologies have been used to describe the phenomenon, such as electronic bullying [79], Internet bullying [106], and cyberbullying [98], with the last term being the most popular and widely adopted. Most cyberbullying studies have derived definitions from traditional bullying literature. For instance, cyberbullying was defined as willful and repeated harm inflicted through the medium of electronic text [72]. Later, a more refined definition, proposing that cyberbullying

is an aggressive online behavior that encompasses three characteristics: (1) it is performed by individuals or groups using electronic or digital media; (2) hostile or aggressive messages are repeatedly communicated; and (3) the behavior is conducted with the intent to cause discomfort or inflict harm on the target, was advocated [95]. Research also suggested that there are different types of cyberbullying behavior, such as flaming, harassment, cyberstalking, denigration, masquerade, outing and trickery, exclusion, and impersonation [48, 105]. At present, there is no exhaustive list of the types of bullying behavior perpetrated on SNSs.

The Nature of SNS Bullying

SNS bullying is a form of aggressive behavior on SNSs conducted by individuals or groups, repeatedly and over time, against targets who cannot easily defend themselves. It shares three definitional criteria with the related concepts of bullying and cyberbullying: intentionality, repetition, and power imbalance [24]. SNS bullying is distinguished from other forms of online deviant behavior, such as Internet trolling and flaming, because it is deliberate, repeated, and involves exploitation of a power imbalance to intentionally harm a target by leveraging the functionalities and capabilities of social networking platforms.

SNS bullying is often viewed as a form of undesirable behavior fostered by the emergence of information technologies [29, 47]. Specifically, the widespread deployment of personal communication devices (such as smartphone, tablet, and laptop) and the ease of connectivity to online platforms have led to individuals spending more time with technologies. This shift in social activities, moving from offline venues to social networking platforms, creates criminogenic opportunities for SNS bullying. In particular, the rapid growth in SNS users has created a wealth of online profiles that make it easy for perpetrators to identify vulnerable individuals. Guardianships of SNS bullying behaviors (e.g., SNS self-reporting functions, laws, and regulations prohibiting bullying) become ineffective because there are thousands to millions of social interactions happen on SNSs every day. It is virtually impossible to monitor, moderate, and control all the uses that have violated the community standards. Such a view is consistent with crime opportunity theory [30], which asserts that social and technological changes produce new opportunities for crime and deviance.

In some countries, individuals face criminal charges and prison time if found guilty of SNS bullying. For instance, in the United Kingdom, Section 127 of the Communications Act of 2003 makes SNS bullying a criminal offense for anyone sending something grossly offensive, indecent, obscene or menacing character via a public electronic communications network. The

law states that a perpetrator can face up to six months in jail, a fine, or both if found guilty [52]. Similarly, nearly half of the states in America include cyberbullying as part of their broader bullying laws. The nationwide trend is toward greater accountability for cyberbullying in general, including criminal statutes [44]. For example, a bill recently passed in West Virginia, making cyberbullying a misdemeanor offense with a maximum punishment of one year in prison, a $500 fine, or both [14].

Toward a Meta-Framework of SNS Bullying

We use crime opportunity theory [30] and the affordance perspective [63] to develop a meta-framework that guides our investigation into SNS bullying. Specifically, crime opportunity theory posits two primary components contribute to a crime being committed: (1) a likely perpetrator, and (2) environmental conditions that offer criminogenic opportunities. These are the building blocks of our meta-framework explaining SNS bullying. We further incorporate the affordance perspective into crime opportunity theory to explain how an SNS allows a perpetrator to evaluate whether environmental conditions would facilitate an SNS bullying act. By integrating the affordance perspective into well-established theoretical frameworks, prior research has demonstrated the viability to obtain contextualized insights into a wide spectrum phenomenon related to information technology uses [e.g., 15, 85, 93]. For instance, the affordance perspective has been integrated into the notion of virtue ethics to explain the effects of organizational IT affordances on organizational virtues and innovation improvement [15]. Hence, we expect that integrating crime opportunity theory and the affordance perspective would provide a useful theoretical foundation for developing a contextualized understanding of SNS bullying. Figure 1 depicts the meta-framework of SNS bullying.

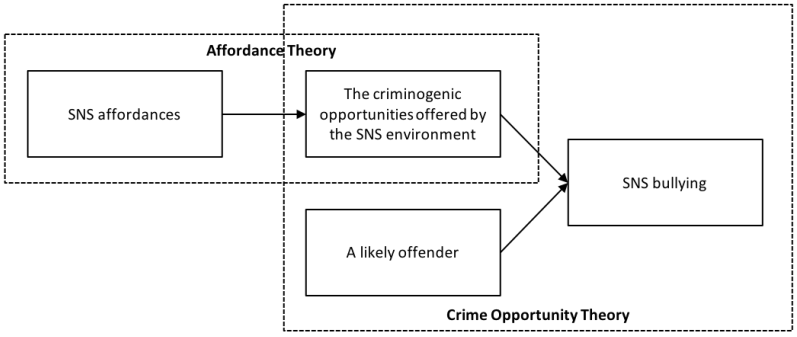

Figure 1. A Meta-Framework of SNS Bullying

Crime Opportunity Theory

Crime opportunity theory [30] asserts that social and technological changes produce new opportunities for crime and deviance. Opportunities play a central role in every category of offense, regardless of its nature and severity. Subscribing to this perspective, we stipulate that the shifts in social activities from offline venues to SNS platforms provide opportunities for likely perpetrators to engage in SNS bullying. We argue that the rapid growth of user populations creates ample opportunities for SNS bullying. Specifically, perpetrators can easily identify vulnerable individuals through browsing their online profiles on SNSs. The massive amount of information flow and social interactions also makes it difficult to monitor and identify acts of SNS bullying, which, in turns, weaken the power of authorities and detection mechanisms in regulating such acts.

Crime opportunity theory further emphasizes that the occurrence of crime and deviance is influenced not just by the perpetrators' characteristics but also by the environmental conditions that offer criminogenic opportunities. Our review of past studies suggest that SNS bullying research has mainly investigated the "likely perpetrator" component, and have included aspects such as the perpetrators' demographic characteristics [e.g., 10, 87], their intensity of SNS usage [e.g., 49], their cyberbullying victimization experience [e.g., 62], and their personality traits [e.g., 46] (see Appendix A for a review). The potential impacts of the "environment" have only recently attracted attention in the literature. For instance, the anonymous SNS environment has been found to be exploited by heavy SNS users to perpetrate others on the platform [56]. As Lowry et al. [56, p. 3] noted, most cyberbullying studies "have glossed over the central issue: the role of information technology or social media artifacts themselves in promoting cyberbullying."

Over the last two decades, researchers have been increasingly using opportunity theories to investigate technology-related crime and deviance, such as data breaches [86] and computer crimes [107]. Empirical studies have also illustrated the applicability of crime opportunity theory for understanding bullying behaviors [e.g., 17]. Hence, considering both the theoretical assumptions and empirical applications, together with the criminogenic nature of SNS bullying discussed in the previous section, we believe that crime opportunity theory is a viable theoretical perspective for explaining SNS bullying. Specifically, our study continues to advance the literature by focusing on the "environment" component and by examining how the SNS environment fosters the development of SNS bullying. Building on prior criminology literature [30, 100], we propose two SNS environmental conditions that offer the criminogenic

opportunities for a likely offender to engage in SNS bullying: (1) presence of suitable targets and (2) absence of capable guardianships.

The affordance perspective

An *affordance* refers to "the potential for behaviors associated with achieving an immediate concrete outcome and arising from the relationship between an artifact and a goal-oriented actor or actors" [92, p. 69]. *Technological affordance* refers to "the mutuality of actor intentions and technology capabilities that provide the potential for a particular action" [60, p. 39]. It arises when one interprets a technology through his or her goals for action. The relational view of affordance is advantageous for understanding technology use because it allows researchers to consider the symbiotic relationship between the capabilities of the technology and the actor's goal and action [36], treating the entanglement between them as a unit of analysis [60]. Research has further shown that one technology can support different goal-oriented actions for members of different social groups [20, 53]. In other words, it is individuals' goals that shape what they come to believe the technology can afford them [96], which in turn leads to a wide spectrum of desirable or undesirable—or intended or unintended—behaviors [60]. For instance, Majchrzak et al. [60] identified four affordances of social media that affect employees' engagement in group online workplace conversations. They suggest that some workers believed metavoicing affordance (i.e., the action possibility enabled by social media for users to engage in the ongoing online knowledge conversation by reacting online to others' presence, profiles, content, and activities) fostered productive knowledge conversations, whereas some thought it inhibited productivity by promoting potentially biased and inaccurate information.

Acting on this perspective, we argue that one could interpret an SNS differently depending on his or her goal [53]. The actualization of affordances occurs when an actor takes advantage of one or more affordances of the SNS to achieve immediate concrete outcomes that support their goals. In this study, the artifact is an SNS, and the goal-oriented actor (i.e., a perpetrator) is a user who purposefully uses an SNS to bully a target. For general users, the actualization of SNS affordances occurs when they make use of the SNS affordances to, perhaps, engage in self-disclosure and read their friends' newsfeed in support of their relationship maintenance and socialization [16]. However, for a likely offender whose goal is to leverage the SNS to bully someone, the actualization of affordances could be completely different. For instance, they might see the SNS as affording them the ability to access information about the

background and activities of other users, which would help them to identify suitable targets, giving rise to a favorable evaluation of SNS environmental conditions for SNS bullying.

Based on the review of the literature on technological affordances [60, 96] and social network research [45], we propose four types of SNS affordances and suggest that they have the potential to influence how one evaluates the SNS environmental condition for SNS bullying. These affordances include accessibility, information retrieval, editability, and association. Table 1 summarizes the definitions and illustrations of these affordances.

Table 1. SNS Bullying Affordances

SNS affordance	Definition	How the affordance relates to SNS bullying	Related SNS affordances/SNS features
Accessibility	The extent to which a user believes that an SNS offers the opportunity to connect to another user on the platform.	This affordance allows a perpetrator to transcend time and spatial constraints in identifying a target for SNS bullying.	Network-informed associating [60]; network transparency [45]
Information retrieval	The extent to which a user believes that an SNS offers the opportunity to obtain information about a user on the platform.	This affordance allows a perpetrator to obtain contents created by a target to understand his/her background, preferences, and daily activities for the purpose of SNS bullying.	Persistence [96]; search and privacy [45]
Editability	The extent to which a user believes that an SNS offers the opportunity to manipulate the content that he/she posted, commented on, and shared on the platform.	This affordance allows a perpetrator to deny his SNS bullying acts by erasing, editing, or hiding bullying related contents and identification cues.	Editability [96]; digital profile [45]
Association	The extent to which a user believes that an SNS offers the opportunity to associate the responsibility for his/her	This affordance allows a perpetrator to elude sole accountability for creating the bullying contents by attributing	Association [96]; relational ties [45]

post with other users who interacted with the post on the platform.	the contents with other users.

Research Model and Hypotheses

Our meta-framework provides a theoretical basis to construct a research model explaining SNS bullying. First, drawing on crime opportunity theory [30], we propose that SNS bullying is driven by two primary components: (1) a likely offender, which is conceptualized as one's inclination to bully and (2) the evaluation of SNS environmental conditions that offer the criminogenic opportunity, which include presence of suitable targets and absence of capable guardianships. Second, subscribing to the affordance perspective [63], we examine how SNS affordances (i.e., accessibility, information retrieval, editability, and association) influence the evaluation of environmental conditions for SNS bullying. Figure 2 depicts the research model.

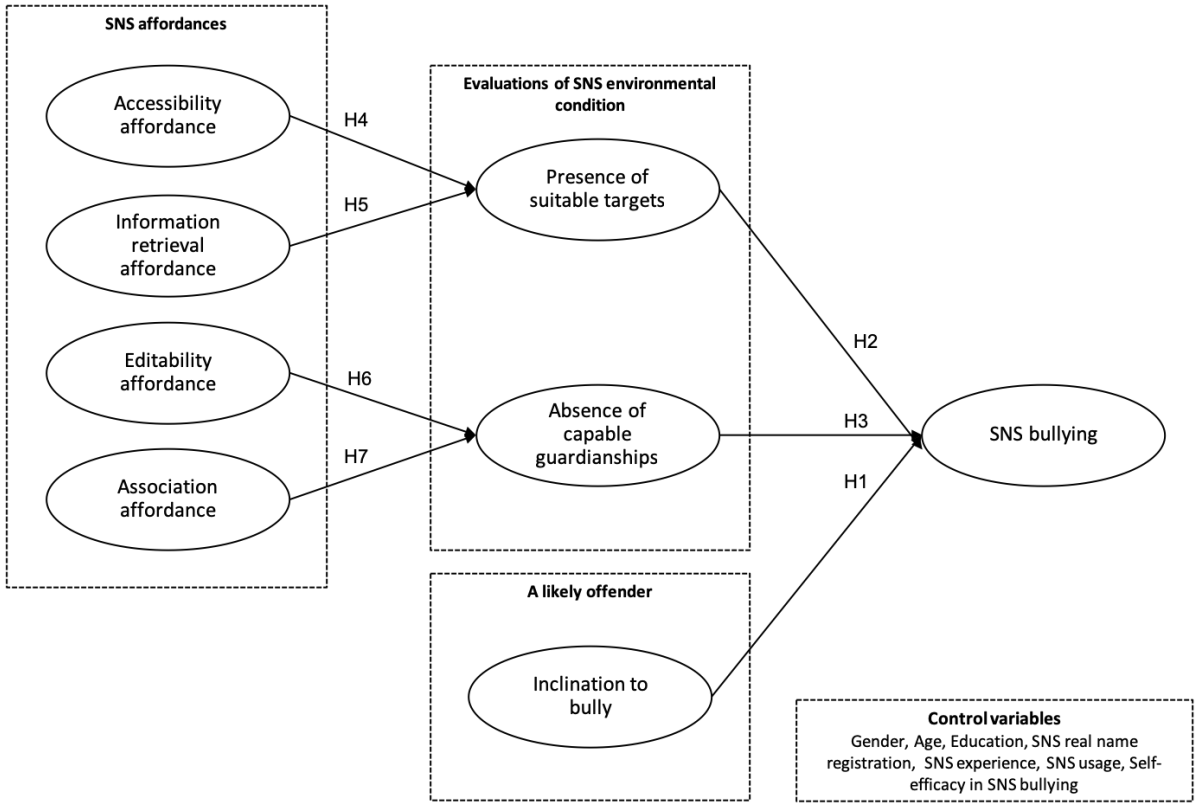

Figure 2. Proposed Research Model

A Likely Offender and SNS Bullying

According to crime opportunity theory, a likely offender refers to a person who might commit a crime or engage in deviant behavior for any reason [30]. Crime opportunity theory presumes that crimes would not happen without an offender, therefore the presence of a likely offender is a necessary prerequisite for any crime or deviance [30].

In this study, we conceptualize a likely offender as someone who has an *inclination to bully* on an SNS, which refers to one's tendency to engage in SNS bullying for any reason [42]. Past studies have shown that positive inclinations toward bullying (e.g., probullying beliefs and favorable attitudes toward cyberbullying) predicted perpetrators' engagement in cyberbullying behaviors [e.g., 50, 104]. For instance, adolescents' inclination to cyberbully was found to positively predict self-reported cyberbullying behaviors among teenagers [42] and secondary students [71]. Therefore, we hypothesize that:

Hypothesis 1*: Inclination to bully positively influences SNS bullying.*

The Evaluation of SNS Environmental Conditions and SNS Bullying

Crime opportunity theory presumes that favorable environmental conditions play a critical role in the occurrence of any crime or deviance [30]. In this study, we propose two SNS environmental conditions which offer the criminogenic opportunities for a likely offender to engage in SNS bullying: (1) *presence of suitable targets*, and (2) *absence of capable guardianships* [30, 100].

Presence of suitable targets. Crime opportunity theory [30, p. 5] states that "targets of crime can be a person or an object, whose position in space or time puts it at more or less risk of criminal attack." The theory asserts that certain characteristics of a target will be of greater interest to a likely offender, such as being visible (e.g., a valuable good is placed near windows) and accessible (e.g., a house with doors left unlocked).

In this work, we define presence of suitable targets as the extent to which a perpetrator believes there are suitable targets in the SNS environment available for SNS bullying. As discussed earlier, the prevalence and popularity of SNSs create new opportunities for SNS bullying [47]. In recent years, not only have the number of SNS users dramatically increased but also the amount of personal information that users posted and shared online. In 2017, 71% of Internet users had an SNS profile on one of the major SNS platforms [90]. Of these, 92% used their real names on their profiles, 91% had a picture of themselves on their profiles, and 82% had posted other personal information on their profiles—such as birth date, gender, education

background, occupation, or country of residence [59]. A large number of users and an ample amount of sensitive personal information available provide a wealth of opportunity to identify suitable targets for SNS bullying. Hence, the perception that the SNS environment is a source of suitable targets is likely to attract more SNS bullying behaviors. This prediction is also evident in the bullying research, which supports a link between suitable targets and bullying behaviors. For instance, students who were perceived to be suitable targets among the perpetrators were more likely to be victimized [76]. Therefore, we hypothesize that:

Hypothesis 2*: Presence of suitable targets positively influences SNS bullying.*

Absence of capable guardianships. Crime opportunity theory suggests that in the absence of capable guardianships, crime and deviance are more likely to occur [30]. According to the theory, guardianships are not confined to government officials alone, but rather include "anybody whose presence or proximity would discourage a crime from happening" [30, p. 4].

In this work, we define absence of capable guardianships as the extent to which a perpetrator evaluates that guardianships are incapable of fortifying SNS environments against SNS bullying. Guardianships here represent both offline authorities (e.g., laws and regulations) and online mechanisms (e.g., reporting systems and detection algorithms) that aim to protect users from being victimized on SNSs. For instance, Facebook has implemented a built-in reporting system that permits users to report any content that is not commensurate with its community standards (such as nudity, hate speech, or violence). The Facebook team regularly reviews the reported materials and removes them if they are deemed inappropriate. These functions serve as a guardianship, protecting general users against SNS bullying. However, with the growing number of posts uploaded and shared on SNSs daily, it has become increasingly challenging for these protective measures to effectively tackle bullying activities on SNSs [5]. Though there have been initiatives to use more advanced techniques—such as artificial intelligence, machine learning, and natural language processing to detect SNS bullying—their effectiveness is restricted by computers' ability to interpret meanings, variations, and metaphors in human language [11]. It remains difficult for guardianships to fortify SNS environments against SNS bullying effectively. Past studies have found support for the link between a lack of guardianships and bullying behaviors. For instance, social guardianships was found to decrease victimization among young people [57]. Therefore, we hypothesize that:

Hypothesis 3*: Absence of capable guardianships positively influences SNS bullying.*

SNS Affordances and the Evaluation of SNS Environmental Conditions

Drawing on the affordance perspective [63], we further examine how the SNS affordances outlined above (*accessibility*, *information retrieval*, *editability*, and *association*) affect the evaluation of SNS environmental conditions (i.e., *presence of suitable targets* and *absence of capable guardianships*), in which criminogenic opportunities for SNS bullying are perceived.

Accessibility affordance. Accessibility affordance refers to the extent to which a user believes that an SNS offers the opportunity to connect with a user on the platform. In SNS bullying, accessibility affordance allows a perpetrator to transcend time and spatial constraints to reach potential targets. Kane et al. [45] suggested that network transparency is one of the essential features of a social network—it allows users to view their connections within a network and offers the opportunity to connect each other. In SNSs, users are given various opportunities to contact and connect with an unlimited number of users—including friends, family members, acquaintances, and even strangers. For perpetrators, however, accessibility affordance facilitates overcoming barriers of time and space to connect with potentially suitable targets. In a recent SNS bullying case, for example, a perpetrator used the hashtag (i.e., #hashtag) and handle (i.e., @username) on Instagram to repeatedly bully a group of young people [66]. The unconstrained and boundless accessibility afforded by SNSs may lead a perpetrator to evaluate that the SNS provides an environment where suitable targets can be easily identified and accessed. Therefore, we hypothesize that:

Hypothesis 4*: Accessibility affordance positively influences presence of suitable targets.*

Information retrieval affordance. Information retrieval affordance refers to the extent to which a user believes that an SNS offers the opportunity to obtain information about a user on the platform. In SNS bullying, information retrieval affordance allows a perpetrator to access material created by a potential target, which provides information about the background, preferences, and daily activities of the potential target. SNS updates often include new features that aim to entice users to continuously create and share information on the platforms. For instance, Facebook's "On This Day" feature shows old photos and newsfeeds to a user and encourages the user to forward these posts and stories with their friends. Instagram, Twitter, and other SNSs often ask users to provide precise information when uploading a photo. Such updates are part of an oversharing phenomenon, with a recent survey estimating that about 40% of users overshare sensitive information on SNSs [64]. Such abundance of unrestricted information puts

users at risk for SNS bullying victimization. For instance, the Facebook timeline provides an easy interface for quickly reading others' activity logs. It is like a scrapbook, providing snapshots of information that can be used to understand a particular user. It allows a perpetrator to trawl back through a target's history, gleaning information from shared photos and statuses and eventually using them to create harassing materials or even to impersonate the person identified as a suitable target [13]. Past studies have also shown that individuals who did not restrict access to their online profiles or who disclosed too much sensitive personal information online were considered more attractive and vulnerable by perpetrators [65, 73]. Therefore, we hypothesize that:

Hypothesis 5*: Information retrieval affordance positively influences presence of suitable targets.*

Editability affordance. Editability affordance refers to the extent to which a user believes that an SNS offers the opportunity to manipulate a content that he or she posted, commented on, and/or shared on the platform. In SNS bullying, editability affordance allows a perpetrator to deny his SNS bullying acts by erasing, editing, or otherwise hiding bullying related contents and identification cues. In offline bullying, it is difficult for a perpetrator to conceal his or her identity because the victim can at least recognize the physical appearance of the perpetrator. Physical damages inflicted on the target are also difficult to hide. In contrast, in SNSs, it is fairly easy for a perpetrator to modify, erase, or hide identification cues in relation to the bullying and his or her identity. For instance, Facebook allows users to edit descriptions of their posts or even delete contents published on their walls. One can also register a new email domain and create an alternative SNS account to engage in SNS bullying. As a result, this affordance weakens the effect of guardianships on SNS because it is difficult for authorities to track and punish SNS bullying behaviors. Therefore, we hypothesize that:

Hypothesis 6*: Editability affordance positively influences absence of capable guardianships.*

Association affordance. Association affordance refers to the extent to which a user believes that an SNS offers the opportunity to share responsibility for his or her post with other users who interact with the post on the platform. In SNS bullying, association affordance allows a perpetrator to avoid accountability for the bullying act by inviting other SNS members; i.e., the perpetrator can deny sole responsibility for carrying out the action. User engagement and

cocreation are core values on most social networking platforms. SNS providers not only entice users to share more information but also encourage others to interact with these posts. For instance, Facebook now offers more nuanced reactions to posts beyond the "like" reaction (i.e., "love," "ha-ha," "wow," "sad," and "angry") to encourage users to express themselves after reading a post. The long-standing tag feature (@user name) allows users to invite others to respond to a post and jointly develop the conversation. Recent statistics show that 44% of Facebook users "Liked" content posted by their friends at least once a day, and 31% made comments on posts daily [89]. On the one hand, association affordance fosters meaningful exchange among platform users. On the other hand, it also allows perpetrators to invite other users to view and participate in bullying posts, making it difficult to designate responsibility for the hurtful contents [82], mitigating the effect of guardianships. Therefore, we hypothesize that:

> ***Hypothesis 7****: Association affordance positively influences absence of capable guardianships.*

Control Variables

Past studies have demonstrated that demographic characteristics, computer usage, and cyberbullying self-efficacy can influence cyberbullying [47]. Accordingly, we include age, gender, education, SNS usage, SNS experience, SNS real name registration, and self-efficacy in SNS bullying, as the control variables.

Research Method

Research Design

We used an anonymous, self-reported, longitudinal online survey design with Facebook users to test the proposed research model. The survey method has been used to examine a broad range of undesirable behaviors related to technology use, such as online software piracy [43], information system misuse [19], and cyberbullying [56]. The self-report questionnaire technique has been used to test crime opportunity theory and the affordance perspective in both offline and online contexts, such as bullying victimization [17], workplace sexual harassment [22], online hate on SNSs [78], and gamification [93]. Using a longitudinal setting can also reduce the threat of common method bias and enhance causal inference [75, 81]. We selected Facebook as the research context because it is the leading SNS worldwide [28]. A recent survey also revealed that cyberbullying is most likely to take place on this platform [23]. Therefore, we believed that

Facebook represents a suitable context for testing our proposed research model. To participate in the study, individuals had to: (1) be users of Facebook; (2) live in the United States (this requirement ensured a standardized perception of laws and norms regarding SNS bullying on Facebook [56]).

Measure

The measurement items were adapted from the literature where possible (e.g., SNS bullying). Minor modifications were made to measurement items to fit the current research context. When measurement items were unavailable (e.g., SNS affordances and crime opportunity components), we followed the guidelines set out in the instrument development literature [68] to develop new instruments to measure the constructs. The instrument development process and the complete list of measurement items for the focal constructs are shown in the online supplement – section A. As the research context examines a socially undesirable behavior, the social desirability scale was also included to detect for potential response bias [80].

Data Collection and Procedures

Respondents for the online survey were recruited from the Amazon Mechanical Turk (MTurk). MTurk is an online crowdsourcing platform that allows people to participate in Human Intelligence Task (HIT) for remuneration. The use of MTurk is appropriate for the current research purpose, as suggested in recent cyberbullying research [e.g., 83] and advocated in senior IS literature [e.g., 56]. Specifically, cyberbullying is a sensitive issue and is socially unacceptable in most cultures. Hence, using MTurk as a portal to reach the target sample helped ensure respondents' anonymity, thereby eliciting responses that are more honest and reducing social desirability bias. Furthermore, since cyberbullying is a general topic that requires minimal expertise, using MTurk to collect data is a good fit. It allows researchers to reach a huge pool of potential respondents with SNS bullying experiences, which is virtually impossible using other data collection methods. To ensure data quality, we followed guidelines as described in the latest methodological literature on MTurk in designing and distributing the survey study [34, 54]. For instance, we checked the workers' location based on their IP address to ensure they reside in the United States. We detected "super workers," who generally put less time and effort into a task, using their completion time and number of tasks completed. We also included randomly appearing attention-check questions and reverse-coded questions to affirm the accuracy of the responses.

The data collection consisted of two waves. At time *t* (Wave 1), HIT requests were posted on MTurk. At this stage, responses related to independent variables (i.e., SNS affordances and crime opportunity components) were collected. The respondents in Wave 1 were then invited to answer another online questionnaire at time *t+1* (Wave 2), in which responses related to the dependent variables (i.e., SNS bullying behaviors) were collected. A unique code was used to match respondents' responses across the two waves of data collection.

At the beginning of the survey, respondents were asked to answer screening questions to determine their eligibility to participate. In particular, they were asked to indicate the three social networking platforms they had visited most frequently during the past three months and asked to report their country of residence. We filtered out respondents who did not pass these screening questions. Following the screening questions, respondents were asked to complete a questionnaire that included measures of the variables of interest in each wave. Finally, they were asked to answer the social desirability items. We collected their demographic information at the end of the survey. We provided a monetary incentive upon successful completion of the questionnaire. Ten randomly presented attention-check questions were included to detect any careless, random, or haphazard responses that may have occurred as a result of the online survey method. Responses from individuals who attempted to participate multiple times (as identified through respondents' MTurk ID and IP address), failed to pass the attention-check questions, and from those who completed the survey in an exceptionally short time (i.e., less than 15 minutes) were filtered out of the sample to ensure data quality.

Respondent Profile

We launched the online surveys in June 2018 (time *t*, Wave 1) and September 2018 (time *t+1*, Wave 2). 1,023 respondents attempted the survey in Wave 1, with 530 indicating Facebook as their most visited SNS and the United States as their country of residence. 32 respondents failed to pass the attention-check questions or provided haphazard responses, leaving 498 complete and valid responses. For Wave 2, we sent an invitation to respondents who participated in Wave 1. 262 attempted the survey, and 39 respondents did not pass the attention-check questions or provided haphazard responses, leaving 223 complete and valid responses for subsequent analyses. Of the remaining respondents, 98 (43.9%) were male, and 125 (56.1%) were female. Most were young adults, between the ages of 25 and 34 (45.3%). The majority visited Facebook at least

once a day (91.0%) and had more than five years of experience using Facebook (85.2%). Table 2 presents the respondent profile.

Table 2. Respondent Profile

	No.	%		No.	%
Gender			*SNS usage*		
Male	98	43.9	Once a week	4	1.8
Female	125	56.1	2-4 times a week	12	5.4
			5-6 times a week	4	1.8
Age			Once a day	52	23.3
18-24	15	6.7	2-3 times a day	42	18.8
25-34	101	45.3	4-5 times a day	25	11.2
35-44	51	22.9	More than 5 times a day	84	37.7
45-54	24	10.8			
55-64	17	7.6	*SNS experience*		
65 or above	15	6.7	Less than a year	3	1.3
			1-2 year(s)	7	3.1
Education			3-4 years	23	10.3
Less than high school	3	1.3	5-6 years	48	21.5
High school	49	22.0	7-8 years	43	19.3
College degree	51	22.9	9-10 years	36	16.1
Bachelor's degree	79	35.4	More than 10 years	63	28.3
Master's degree	31	13.9			
Doctoral degree	3	1.3			
Professional degree	7	3.1			

Data Analysis and Results

Because survey methodologies may be plagued by common method bias (CMB) and social desirability bias (SDB), we applied several procedural and statistical remedies to minimize these threats. The results suggest that both CMB and SDB were negligible in this study [75, 84]. Detailed procedures are reported in the online supplement – section B.

We assessed the reliability of the measurement items using Cronbach's alpha and examined the convergent and discriminant validity of the constructs using factor analysis and pairwise chi-square tests. Specifically, all of the constructs demonstrate internal consistency with Cronbach's alpha values exceeding the threshold [38]. Factor analysis showed that items load

strongly on their corresponding constructs with low cross-loadings with other constructs. Furthermore, the chi-square tests showed that all chi-square differences for each pair of constructs in the research model are statistically significant. An examination into the variance inflation factors also suggested that the model does not suffer from multicollinearity issue. Taken together, the measurement model demonstrates sufficient convergent validity and discriminant validity [38, 99]. Details of the assessment of the reliability, validity, and multicollinearity can be found in the online supplement – section C and D.

We performed hierarchical regression analyses to test the hypotheses. To test the direct effects of the crime opportunity components on SNS bullying, we ran a control effect model and then a main effect model. Table 3 shows the results of these analyses. We first tested the control variables. The control-only model explains 29.5% of the variance for SNS bullying. After that, we tested the effects of inclination to bully, presence of suitable targets, and absence of capable guardianships on SNS bullying. The main effect model explains 54.7% of the variance for SNS bullying. Specifically, inclination to bully (β = .443, p < .001), presence of suitable targets (β = .173, p < .001), and absence of capable guardianships (β = .118, p < 001), predict SNS bullying, supporting H1, H2, and H3.

To test the effects of SNS affordances on the evaluation of SNS environmental conditions, we ran a control effect model and then a main effect model. Table 4 shows the results of the analyses. The results indicate that information retrieval affordance (β = .265, p < .001) predicts presence of suitable targets, supporting H5. The model explains 13.3% of the variance for presence of suitable targets. Furthermore, the analysis shows that editability affordance (β = .233, p < .01) and association affordance (β = .182, p < .001) predict absence of capable guardianships, supporting H6 and H7. The model explains 13.4% of the variance for absence of capable guardianships. However, accessibility affordance has no influence on presence of suitable targets (β = -.098, p > .05), failing to support H4. Table 5 summarizes the hypotheses test results.

Table 3. Results of Regression Analysis on Crime Opportunity Components

Dependent variable	SNS Bullying	
	Control-only	Main effect
Control variables		
Gender	-.165**	-.095
Age	-.237***	-.102*
Education	.111	.051

SNS usage	-.037	-.026
SNS experience	-.396***	-.216***
SNS real name registration	.008	.002
Self-efficacy in SNS bullying	.173**	.077
Main effects		
Inclination to bully		.443***
Presence of suitable targets		.173***
Absence of capable guardianships		.118**
R^2	.295	.547
ΔR^2		.252***

*Note. *p < .05; **p < .01; ***p < .001.*

Table 4. Results of Regression Analysis on SNS Affordances

Dependent variable	Presence of suitable targets		Absence of capable guardianships	
	Control-only	Main effect	Control-only	Main effect
Control variables				
Gender	-.064	-.034	.095	.098
Age	-.146*	-.098	-.038	.007
Education	.027	-.022	.049	.036
SNS usage	-.053	-.060	.125	.135
SNS experience	-.168*	-.112	-.029	-.036
SNS real name registration	-.011	.018	-.104	-.067
Self-efficacy in SNS bullying	.103	.086	.125	.075
Main effects				
Accessibility affordance		-.098		
Information retrieval affordance		.265***		
Editability affordance				.233**
Association affordance				.182*
R^2	.070	.133	.040	.134
ΔR^2		.063**		.094***

*Note. *p < .05; **p < .01; ***p < .001.*

Table 5. Summary of Hypotheses Test Results

Hypothesis	Result
H1: Inclination to bully positively influences SNS bullying.	Supported
H2: Presence of suitable targets positively influences SNS bullying.	Supported
H3: Absence of capable guardianships positively influences SNS bullying.	Supported
H4: Accessibility affordance positively influences presence of suitable targets.	Not Supported
H5: Information retrieval affordance positively influences presence of suitable targets.	Supported
H6: Editability affordance positively influences absence of capable guardianships.	Supported
H7: Association affordance positively influences absence of capable guardianships.	Supported

Post Hoc Analyses

Comparison of Alternative Models

We performed a pseudo-*F* test to assess the effects of excluding the components inclination to bully or evaluation of SNS environmental conditions from the model, along with the resulting change in variance explained for SNS bullying. As shown in Table 6, the exclusion of either of these components leads to a significant drop in variance for SNS bullying. This result indicates that SNS bullying is better explained by examining the likely offender and the environmental condition components together, providing further support to crime opportunity theory.

Table 6. Results of the Pseudo-*F* Test

Comparison	R^2 excluded	R^2 full	ΔR^2	ΔF	Cohen's f^2	Effect size
Inclination to bully excluded	.411	.547	.135	63.270***	.156	Medium
Evaluation of SNS environmental conditions excluded	.495	.547	.052	12.137***	.055	Small

Note. $f^2 \geq .02$, $f^2 \geq .15$, *and* $f^2 \geq .35$ *represent small, medium, and large effect sizes, respectively [18].*

Assessment of the Mediation Effects

We conducted bootstrapping analyses to examine the mediating effects using PROCESS [41, 58]. We bootstrapped the effects of SNS affordances (i.e., accessibility, information retrieval, editability, association) on the evaluation of SNS environmental conditions (i.e., presence of suitable targets, and absence of capable guardianships) ($a_{1\text{-}4}$), the effects of the evaluation of SNS environmental conditions on SNS bullying ($b_{1\text{-}2}$), and the effects of SNS affordances on SNS bullying ($c'_{1\text{-}4}$) [97]. Table 7 summarizes the mediation tests.

Full mediation is observed when the confidence intervals (CIs) of the indirect effect (i.e., *ab*) does not involve zero but the direct effect (i.e., *c'*) does. In our model, presence of suitable targets fully mediates the relationship between information retrieval affordance and SNS bullying; and absence of capable guardianships fully mediates the relationships between editability affordance and SNS bullying. Furthermore, absence of capable guardianships partially mediates the relationships between association affordance and SNS bullying. However, there is no mediation effect found between accessibility affordance and SNS bullying. The results indicate that whereas the effects of information retrieval affordance and editability affordance are explained wholly by presence of suitable targets and absence of capable guardianships, respectively, association affordance has a direct positive effect on SNS bullying beyond the effect that is mediated by absence of capable guardianships. In other words, being able to associate one's act with other SNS users may have psychological effects, such as diffusion of responsibility, beyond simply perceiving an absence of capable guardianships [97].

Table 7. Results of the Mediation Tests

SNS affordances (IV)	The evaluation of SNS environmental conditions (M)	Mediation test (ab)					Full/Partial mediation test (c')				
		Indirect effect	Bias-corrected 95% confidence intervals for indirect effect		Zero?	Mediation?	Direct effect	Bias-corrected 95% confidence intervals for direct effect		Zero?	Types of mediation
		Effect (SE)	Lower	Upper			Effect (SE)	Lower	Upper		
Accessibility	Presence of suitable targets	-.051(.030)	-.116	.004	Yes	No	-.154 (.120)	-.390	.083	Yes	None
Information retrieval		.110 (.037)	.051	.198	No	Yes	-.071 (.062)	-.193	.052	Yes	Full
Editability	Absence of capable guardianships	.099 (.034)	.047	.180	No	Yes	-.167 (.097)	-.359	.025	Yes	Full
Association		.048 (.021)	.016	.103	No	Yes	.204 (.061)	.084	.324	No	Partial

Assessment of the Interaction Effects

Crime opportunity theory holds that offenders behave rationally and engage in crime and deviance when the environment is favorable [30]. Accordingly, we expect that the evaluation of SNS environmental conditions will not only have a direct effect on SNS bullying but also exacerbate perpetrators' inclination to actually engage in SNS bullying behaviors.

Inclination to bully × The evaluation of SNS environmental conditions. We expect two two-way interaction effects between the inclination to bully and the evaluation of SNS environmental conditions (i.e., presence of suitable targets, and absence of capable guardianships). In traditional bullying, most bullying takes place among primary and secondary students. In these populations, there is always a large pool of peers from which a perpetrator can easily select a suitable target. Also, bullying often takes places after school, when a vulnerable target is away from teachers' supervision [24]. Based on this logic, it is plausible that in SNS bullying, when one with an inclination to bully evaluates the SNS environment as favorable, he or she would believe that the effort involved in finding suitable targets or the chances of being caught would be low. As a rational perpetrator, he or she would be more likely to translate the inclination into action. Therefore, the relationship between inclination to bully and SNS bullying will be stronger when the evaluation of the SNS environmental conditions is favorable (i.e., high in terms of presence of suitable targets or absence of capable guardianships).

Presence of suitable targets × Absence of capable guardianships. We expect a two-way interaction effect between these two environmental conditions. Prior research report that bullying incidents are less likely when teachers are attentive to students at school [17] and that high levels of parental support reduce the risk of cyberbullying victimization among adolescents [101]. These findings suggested that the attractiveness of a target (i.e., the perception of suitability) could be greatly reduced by the presence of capable guardianships. Based on this logic, it is plausible that when the perpetrator perceives a relative absence of capable guardianships, he or she would likely estimate a higher number of suitable targets present in the SNS environment. For instance, if a perpetrator perceives the detection mechanism of SNS bullying to be ineffective, he or she would tend to believe that users are more vulnerable because there is no one to protect them from being bullied. Conversely, if a perpetrator perceives that guardianships are effectively filtering and removing bullying content quickly and therefore safeguarding the potential targets, they may evaluate users on the SNS platform as less suitable for bullying.

Therefore, the relationship between presence of suitable targets and SNS bullying is stronger when the perpetrator perceives a higher degree of absence of capable guardianships.

Inclination to bully × Presence of suitable targets × Absence of capable guardianships. We expect a three-way interaction effect on SNS bullying between the inclination to bully, presence of suitable targets, and absence of capable guardianships. Crime opportunity theory assumes that crime components (i.e., offender, target, and guardians) are interrelated [35]. Crime and deviance are most likely to occur when an offender finds favorable environmental conditions [30]. Therefore, when one with an inclination to bully perceives two favorable SNS environmental conditions existing in time and space (i.e., a high degree of presence of suitable targets and a high degree of absence of capable guardianships), he or she expects minimal effort and risk when engaging in SNS bullying. As a result, the perpetrator is more likely to act opportunistically and translate the inclination into actual behavior.

We conducted bootstrapping analyses to examine the interaction effects using PROCESS [41]. Table 8 summarizes the moderation tests. The results show two significant two-way interactions among the crime opportunity components. Specifically, presence of suitable targets (β = .185, p < .05) positively moderates the relationship between inclination to bully and SNS bullying, whereas absence of capable guardianships (β =.197, p <.001) positively moderates the relationship between presence of suitable targets and SNS bullying. Specifically, SNS bullying is more likely to occur when a likely offender who is inclined to bully perceives a higher number of suitable targets. Targets are also more prone to being perceived as vulnerable and suitable for an attack when there is a higher degree of absence of capable guardianships. The significant moderating effects provide additional support for the salience of environmental conditions in exacerbating SNS bullying behaviors, supporting crime opportunity theory.

Table 8. Results of the Interaction Effects of the Crime Opportunity Components

Dependent variable	SNS bullying	
Interaction effects	Coeff. (β) (SE)	t-value (sig)
Inclination to bully × Presence of suitable targets	.185 (.084)	2.207*
Inclination to bully × Absence of capable guardianships	.171 (.098)	1.750$^{(n.s.)}$
Presence of suitable targets × Absence of capable guardianships	.197 (.052)	3.822***
Inclination to bully × Presence of suitable targets × Absence of capable guardianships	.079 (.074)	1.067$^{(n.s.)}$

Note. n.s. Not significant; *p < .05; ***p < .001.

We conducted simple slope analyses to further understand the nature of the interaction effects among inclination to bully, presence of suitable targets, absence of capable guardianships, and SNS bullying. We plotted the significant interactions at one standard deviation above and below the mean of the variables [1]. Figure 3a–3b show the interaction plots. For the two-way interaction of inclination to bully × presence of suitable targets, we observe a stronger and significant positive relationship between inclination to bully and SNS bullying when presence of suitable targets is high. Furthermore, we observe a stronger and significant positive relationship between presence of suitable targets and SNS bullying when there is a high degree of absence of capable guardianships. Details of the conditional effects at values of the moderators can be found in the online supplement – section E. These results imply that SNS bullying is more likely to occur when there are favorable environmental conditions on SNSs. The results, therefore, support crime opportunity theory, which posits that easy and tempting environmental conditions attract more crime and deviance.

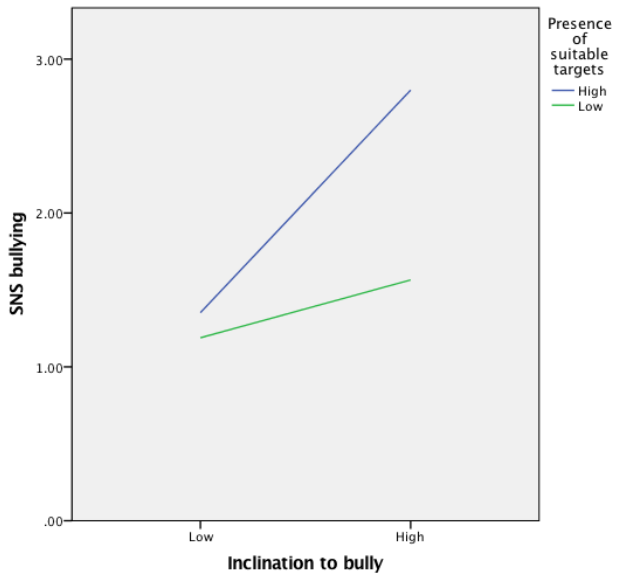

Figure 3a. Two-way Interaction between Inclination to Bully and Presence of Suitable Targets

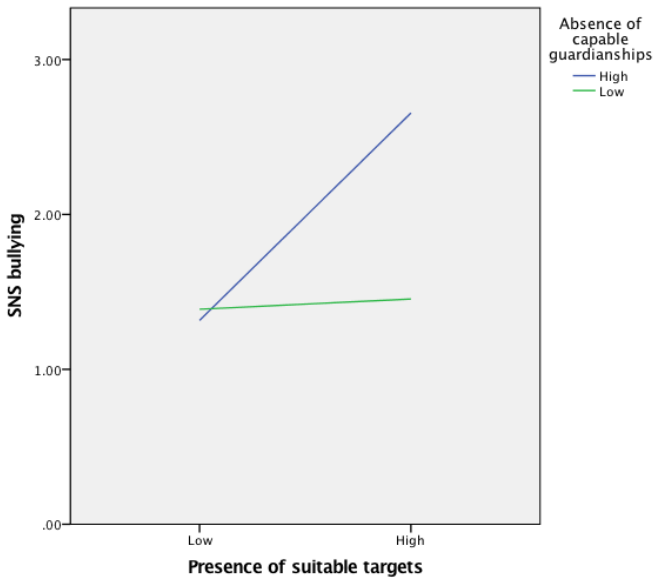

Figure 3b. Two-way Interaction between Presence of Suitable Targets and Absence of Capable Guardianships

Discussion

The objectives of this work are to (1) understand the key environmental factors driving SNS bullying, and (2) examine how SNS affordances influence the evaluation of SNS environmental conditions. We build on crime opportunity theory and the affordance perspective to develop a

meta-framework that explains the occurrence of SNS bullying and delineates the role of technology affordance. The research model was tested using a longitudinal survey with 223 Facebook users. Empirical results provide strong evidence in support of the research model, and the overall model explains a substantial amount of variance in SNS bullying. In the following sections, we discuss implications for research and practice, limitations, and avenues for future research.

Implications for Research

This work has significant implications for research. First, we offer a comprehensive theoretical explanation and empirical investigation into SNS bullying that considers factors associated with both individual characteristic and SNS environmental conditions. We further identify and test the effects of SNS affordances that influence perpetrators' evaluation of SNS environmental conditions for SNS bullying. The empirical results demonstrate strong support of the integration of the two theoretical perspectives, which offer rich insights into the occurrence of SNS bullying. The meta-framework also serves as a solid basis for future studies aiming to examine the effects of technology affordance on technology-related crime and deviance.

Second, our empirical results enrich our scientific understanding of SNS bullying and add to the knowledge accumulation of the cyberbullying literature. Crime opportunity theory and its predictive power have been validated previously in offline and organizational contexts. This work extends the generalizability of the theory to the SNS bullying context, contributing to the cumulative tradition of scientific research and the ongoing assessment of the theory. Specifically, our results show that crime opportunity theory is a plausible theoretical lens for investigating technology-related crime and deviance at an individual level. We further explore the interaction effects between the components of crime opportunity theory and identify the combinations that exacerbate SNS bullying.

Third, we enrich the IS literature by introducing the affordance perspective into the study of SNS bullying research. Based on past research on technological affordances and social network research, we identify four SNS affordances and examine their effects on the environmental conditions conducive to SNS bullying. Our empirical results demonstrate the salience of affordance in giving rise to the favorable evaluation of criminogenic opportunity. Technological affordances have long been recognized as a useful concept to explain the action possibilities perceived by users interacting with technologies. However, previous work has tended to associate affordances with positive behaviors, such as maintaining friendships and

sharing useful content on social networks, with little understanding of how technological affordances can enable undesirable behaviors. Our results offer a novel perspective on the far-reaching and unintended effects of technological affordances as a potential enabler of technology-related crime and deviance.

Implications for Practice

A large body of research on SNS bullying has shown that online users with certain characteristics are more vulnerable to both SNS bullying perpetration and victimization [e.g., 73]. Although these insights are valuable, we contend that actionable and proactive measures can be better developed by focusing on the recertification of the SNS features and environmental conditions.

First, our work observes that SNS bullying could be enabled by SNS affordances. We found that the information retrieval affordance significantly drives the perception of suitable targets on SNSs. Educating SNS users to limit the amount of private and sensitive information that they share on online platforms could help reduce their attractiveness to potential perpetrators. For instance, educational videos that alert users about the potential risks of "friending" strangers and disclosing sensitive personal information could be developed and auto-played on social networking sites themselves. To mitigate unintended uses of personal information, SNS developers should also introduce more sophisticated options for users to control their preferences for information disclosure. Such measures could help to reduce the attractiveness of users on social networking platforms and keep them safe from SNS bullying.

Another potential means of reducing SNS bullying would be introducing and reforming legislation that regulates undesirable online behaviors. Recently, national governments have started to engage in legislative action and other measures to protect users from SNS bullying. For instance, the Prime Minister of the United Kingdom has urged social networking giants Facebook and Twitter to tighten their rules to prevent cyberbullying [21]. Such actions might align SNS bullying with higher potential costs, intensifying the perception of capable guardianships presents on the platform. Because editability affordance and association affordance are important drivers for evaluating the absence of capable guardianships in SNS environment, new legislation imposing heavier legal consequences of SNS bullying could be useful in discouraging such behavior. To complement these legislative initiatives, SNS developers should establish zero-tolerance policies toward SNS bullying behaviors and indicate clearly the punishment of undesirable behavior to site users. For instance, platforms should give

warnings to users if any inappropriate site use is detected, and temporary account suspension should be imposed if a user is found guilty of violating the terms of use. It is also essential for SNS developers to be cautious about their core design principles, which obviously favor maximizing social interaction. Such design principles have constantly been abused by perpetrators who seek to involve more accomplices in the incident, thereby allowing them to deny sole culpability. Finally, SNS platforms should inform users that any information uploaded onto the site will be stored and subject to investigation upon request by the proper authorities.

Limitations and Future Research Directions

Our work does have some limitations that should be acknowledged—which, however, also gesture toward several avenues for future research. First, care must be taken when extrapolating the findings of this study to bullying on other SNSs and in other countries. Specifically, we tested the research model using a single SNS platform with American adult users. The homogeneity of the respondent profile may have affected the generalizability of our conclusions. However, the sample did consist of respondents with heterogeneous demographic characteristics—such as SNS usage experience, educational background, and age—which may have helped to overcome sampling limitations. Future research should replicate our research model and test whether users' evaluation of SNS environmental conditions can be generalized to different user groups (e.g., children), other cultural contexts (e.g., Asia), or social networking platforms (e.g., Twitter).

Second, since we used an online survey to collect the data, our findings may be influenced by response bias. To address these concerns, we used a third-party platform and an anonymous survey setting to minimize the threat of response bias and used the social desirability scale to detect biased responses. We also applied both procedural remedies and statistical remedies to detect and mitigate concerns related to common method bias. Nevertheless, our study may have been influenced by self-selection bias, which is difficult to estimate when using an online survey design. It is also possible that some respondents with SNS bullying experience left the survey after being exposed to sensitive questions.

Third, we consolidated four general SNS affordances from the literature and tested their effects in our research model explaining SNS bullying. Although our study breaks new ground by investigating the unintended effects of SNS affordances on giving rise to favorable environmental conditions for SNS bullying, future research should explore other SNS affordances associated with specific social networking platforms. For instance, Snapchat allows

photos to be viewable for a maximum of only 10 seconds. Such design can be further examined by introducing an "erasability" affordance, which may affect the evaluation of capable guardianships on Snapchat and alter SNS bullying behaviors and dynamics. Future research should also examine the technical objects that giving rise to an affordance. In this study, we broadly considered the technical object to be the "SNS" (i.e., Facebook). An experimental setup would, therefore, be beneficial for future studies to better understand and test the exact technical features and characteristics that give rise to these affordances.

Finally, because we used a typical variance model based on longitudinal online survey design, we were only able to infer causation from the theoretical foundation and research design. Despite this limitation, we prefer the survey method over other alternatives. It allows us to maximize the predicted frequency of SNS bullying by providing a snapshot of the relative effects and interaction effects among the various crime opportunity components. Future research should use experiments, interviews, and case studies to validate the research findings. However, the use of these alternative research designs may inevitably induce undesirable cyberbullying experiences to the participants, and conflict with participants' ability to remain anonymous due to the requirement for identification. This may lead to new challenges in eliciting honest responses while maintaining confidentiality.

Conclusion

Drawing on crime opportunity theory and the affordance perspective, we develop and empirically test a research model to explain SNS bullying. The research model explains a substantial amount of the variance for SNS bullying and highlights the imperative role of technology affordance and SNS environment in shaping SNS bullying. We believe that the results have significant implications for research on the adverse and unintended use of technology and provide practical guidance for formulating preventive measures and educational programs to combat SNS bullying.

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Appendix

Table A. Summary of Prior Studies on SNS Bullying

Study	Objective	Theoretical foundation	Method	Sample
Alhabash et al. [2]	To explore the persuasive effects of the use of emotional appeal and message virality of Facebook status updates as a corrective tool for cyberbullying	Did not specify	Experiment	University student (n=365)
Anderson et al. [3]	To test how social support for the victim, via dissenting comments, may affect bystanders' behaviors in a cyberbullying episode	Did not specify	Experiment	University student (n=181)
Bastiaensens et al. [4]	To examine the influence of contextual factors on bystanders' behavioral intentions to help the victim or reinforce the bully in cases of harassment on Facebook	Did not specify	Experiment	High school students (n=453)
Bellmore et al. [6]	To understand cyberbullying using social media data	Did not specify	Machine learning methods	Public tweets between September 2011, and August 2013 (n = 9764583)
Bowler et al. [7]	To generate a values-oriented, user-generated conceptual framework for understanding and guiding the design of social media that might counteract or prevent cyberbullying	Cheng and Fleischman's values framework	Visual narrative inquiry	University students and Teens (n=9)
Brody and Vangelisti [8]	To examine variables that were expected to influence the propensity of a bystander to act in cyberbullying incidents	Bystander effect	Survey; Experiment	University students (n= 265; n= 379)
Calvin et al. [9]	To understand the bullying topics that Twitter users posted about across 2012 by studying which hashtags were employed and how they were utilized.	Did not specify	Data mining	Hashtags between January 1, 2012 and

				December 31, 2012 (n= 552831)
Cao and Lin [10]	To investigate how victimization experiences, influence teenagers' reaction strategies when witnessing cyberbullying on SNSs	Did not specify	Survey	Teens (n=622)
Chapin [12]	To document adolescents use of Facebook and experience with cyberbullying	The precaution adoption process model	Survey	Adolescents (n=1488)
Dredge et al. [25]	To examine adolescent victims' understanding of cyberbullying, the specific cyberbullying events experienced in SNS and impacts	Did not specify	Interview	High school students (n=25)
Dredge et al. [26]	To identify the factors that affect the impact of cyberbullying upon adolescent victims who use SNS	Did not specify	Interview	High school students (n=25)
Dredge et al. [27]	To investigate the associations between self-presentation behaviors in Facebook and cyberbullying victimization	The victim precipitation model	Content analysis	Facebook profile pages (n=147)
Freis and Gurung [31]	To determine what will make a participant intervene in an online bullying situation, and to measure the types of techniques participants use to intervene	Did not specify	Experiment	University student (n=37)
Gahagan et al. [32]	To increase understanding regarding cyberbullying experience on social networking sites among college students	Did not specify	Survey	University student (n=196)
Ging and Norman [33]	To explore how friendship, conflict, and bullying are experienced and understood by Irish teenage girls in relation to Facebook	Did not specify	Survey	High school student (n=116)
Hamm et al. [39]	To review existing publications that examine the health-related effects of	Did not specify	Literature review	Peer-reviewed journal articles

	cyberbullying via social media among children and adolescents			(n=34)
Kokkinos et al. [46]	To examine the prevalence of cyberbullying on Facebook and its associations with individual characteristics	Did not specify	Survey	University students (n=226)
Kwan and Skoric [49]	To examine the phenomenon of cyberbullying on Facebook and how it is related to school bullying among secondary school students	Did not specify	Survey	High school student (n=1676)
Lee et al. [51]	To investigate the relationships between friendship networks with the experiences as victims, perpetrators, and bystanders of cyberbullying among young adolescents	Did not specify	Survey	Adolescents (n=921)
Lowry et al. [56]	To study how the information technology artifact influence and why people are socialized to engage in cyberbullying	Social learning theory of crime	Survey	Adult (n=1003)
Lowry et al. [55]	To explore system characteristics that prevent cyberbullying	Control balance theory	Factorial survey	Adult (n=507)
Marcum et al. [62]	To explore the differences in male and female cyberbullying, as well as the victim-offender relationship experienced by each sex	Did not specify	Survey	University students (n=1139)
Meter and Bauman [67]	To study the relationships between social network engagement and cyberbullying involvement over time	The social-ecological model	Survey	Students (n=1272)
Pabian et al. [70]	To empirically investigate the relationships between the dark triad personality traits and cyber-aggression on Facebook	Did not specify	Survey	Adolescents (n=324)
Peluchette et al. [73]	To examine the impacts of risky social network site practices and individual differences in self-disclosure and personality on cyberbullying	Did not specify	Survey	Young adults (n=572)

	victimization on Facebook users.			
Obermaier et al. [69]	To examine the bystander effect in cyberbullying	Bystander effect	Experiment	University student (n=85; n=440)
Rachoene and Oyedemi [77]	To examine online bullying among South African youth on Facebook	Did not specify	Digital ethnography	Facebook page (n=6)
Räsänen et al. [78]	To examine the determinant online hate victimization on Facebook	Did not specify	Survey	Finnish Facebook users (n=723)
Schacter et al. [83]	To understand the conditions under which bystanders will show increased support for victims of cyberbullying	Attribution theory	Experiment	Adult (n=118)
Sengupta and Chaudhuri [87]	To identify the key factors associated with cyber-bullying and online harassment of teenagers in the United States	Did not specify	Panel data from PEW	Teen (n=935)
Wegge et al. [102]	To examine how young people's connections on SNSs are related to their risk of being involved in cyber-harassment and cyberbullying	Did not specify	Survey	High school student (n=1458)
Whittaker and Kowalski [103]	To examine the prevalence rates of cyberbullying among college-age students	Did not specify	Survey data mining	University student (n=244; n=197) Facebook post (n=2961)

ONLINE SUPPLEMENT

A. The Instrument Development Process

A three-stage instrument development process, including item generation, instrument development, and instrument testing [10], was used to develop items for SNS affordances (i.e., accessibility, information retrieval, editability, and association) and crime opportunity components (i.e., inclination to bully, presence of suitable targets, and absence of capable guardianships). This approach has been widely adopted by IS researchers and has worked well for developing measurements with desirable psychometric properties [e.g., 2, 6].

In particular, in the item generation stage, we reviewed the prior literature and generated an initial list of 42 candidate items. An expert panel, which consisted of three experienced IS researchers in the knowledge domain, was invited to assess the face validity of the items and improve the quality of the items. Their feedbacks were incorporated to refine the candidate items.

In the instrument development stage, we conducted two rounds of card sorting exercise with two different groups of SNS users (four users for each round). We assessed the inter-rater reliability using Cohen's kappa and item placement ratio. Items with a poor placement were dropped. Specifically, in the second round of card sorting, the Cohen's kappa ranged between .85 and .90 and averaged .87. The overall placement ratio of items within the target dimensions were 86%, indicating that the items were sorted into the intended dimensions. Twenty-seven items were retained for the next stage.

In the instrument testing stage, we conducted a pilot test with 180 SNS users to evaluate the psychometric properties of the items. We tested the reliability of the instrument using the Cronbach's alpha. All constructs exhibited satisfactory reliability, greater than the recommended threshold of .70 [5]. Table A1 shows the result of the reliability test, means, standard deviations, and bivariate correlations for the constructs. We performed a principal components analysis to test the validity of the items. The newly developed instrument exhibited a satisfactory convergent and discriminant validity, with almost all items loaded above .70 on their intended construct and had a low cross-loading with other constructs which they did not belong to. Three items were dropped due to a low item loading. Table A2 shows the result of the factor analysis.

Taken together, the instrument development generated 24 items for measuring SNS affordances and crime opportunity components. These measures were further validated in the main study. All of the constructs are assessed using perceptual scales with the responses measured on a 7-point Likert scale, and multiple items are used to ensure the reliability and validity of the constructs. A pre-test of the survey study was conducted with 150 active Facebook users. Following the survey method guidelines [3], the pre-test assessed six aspects relating to the survey questionnaire: (1) the clarity of the instructions, (2) the clarity of the wording, (3) the relevance of the items, (4) the absence of biased words and phrases, (5) the use of standard English, and (6) the

questionnaire format. The participants' feedback was taken into account in the preparation of the final version of the survey questionnaire. Table A3 presents the measurement items.

Table A1. Cronbach's Alpha, Means, Standard Deviations, and Construct Correlations

	Mean	Std. Deviation	Cronbach's Alpha	1	2	3	4	5	6	7
1. Inclination to bully	2.521	1.833	.912	1						
2. Presence of suitable targets	4.062	1.602	.915	.432**	1					
3. Absence of capable guardianships	4.603	1.306	.951	.231**	.293**	1				
4. Accessibility affordance	5.072	1.418	.932	.142	.364**	.101	1			
5. Information retrieval affordance	4.846	1.431	.913	.212**	.431**	.224**	.682**	1		
6. Editability affordance	5.344	1.222	.881	-.0483	.072	-.012	.264**	.264**	1	
7. Association affordance	5.559	.983	.922	-.261**	.042	.038	.231**	.272**	.521**	1

Table A2. Factor Analysis

		1	2	3	4	5	6	7
1. Inclination to bully	Item1	***.954***	.447	.219	.159	.243	.323	.378
	Item2	***.956***	.417	.214	.117	.187	.292	.341
	Item3	***.930***	.380	.225	.150	.201	.298	.317
	Item4	***.962***	.456	.247	.161	.229	.325	.382
	Item5*	.566	.414	.227	.117	.189	.297	.336
2. Presence of suitable targets	Item1	.344	***.886***	.240	.302	.402	.216	.339
	Item2	.446	***.872***	.258	.271	.320	.308	.380
	Item3	.531	***.864***	.201	.228	.307	.325	.381
	Item4	.322	***.867***	.253	.335	.414	.228	.337
	Item5*	.207	.578	.293	.407	.398	.211	.295
3. Absence of capable guardianships	Item1	.235	.274	***.872***	.071	.165	.132	.273
	Item2	.129	.247	***.831***	.140	.262	.133	.253

	Item3	.156	.189	***.846***	.116	.167	.115	.257
	Item4	.201	.238	***.870***	.084	.191	.146	.258
	Item5*	.272	.268	.637	.074	.162	.124	.310
4. Accessibility affordance	Item1	.116	.328	.125	***.948***	.630	.291	.359
	Item2	.107	.326	.046	***.915***	.622	.239	.260
	Item3	.179	.340	.108	***.937***	.665	.326	.305
5. Information retrieval affordance	Item1	.169	.335	.206	.666	***.910***	.305	.441
	Item2	.137	.387	.173	.621	***.902***	.322	.461
	Item3	.283	.447	.225	.602	***.942***	.371	.477
6. Editability affordance	Item1	.337	.310	.174	.309	.352	***.952***	.578
	Item2	.309	.284	.086	.299	.357	***.890***	.559
	Item3	.255	.259	.140	.278	.318	***.947***	.566
7. Association affordance	Item1	.275	.383	.315	.298	.453	.550	***.920***
	Item2	.397	.412	.261	.309	.486	.582	***.912***
	Item3	.308	.277	.276	.311	.386	.479	***.827***

Note. * Item dropped due to a low item loading

Table A3. Measurement Items

Construct	Item
SNS bullying	In the past three months, how often did you engage in the following behaviors on Facebook?
Adapted from Lowry et al. [9], Shaw et al. [16], 7-point Likert scale (1=Never to 7=Always)	SNSB01: I posted hurtful, rude, inappropriate, or mean content that targets someone.
	SNSB02: I publicly embarrassed or pranked someone with information or photos that are potentially harmful.
	SNSB03: I spread rumors or untrue information about someone.
	SNSB04: I sent threatening or harassing messages to someone.
Inclination to bully	PER01: I am likely to engage in SNS bullying perpetration.
Self-developed, 7-point Likert scale (1=Strongly disagree to 7=Strongly agree)	PER02: I tend to bully others on SNSs.
	PER03: I am inclined to commit SNS bullying.
	PER04: I am likely to perpetrate someone on SNSs.

Presence of suitable targets	The Facebook environment has…
Self-developed, 7-point Likert Scale	TAR01: suitable people for bullying.
(1=Strongly disagree to 7=Strongly agree)	TAR02: ideal users for me to engage in bullying perpetration.
	TAR03: right candidates for me to attack.
	TAR04: attractive targets for bullying.
Absence of capable guardianships	The Facebook environment has …
Self-developed, 7-point Likert scale	GUA01: no capable guardianships to prevent bullying activities .
(1=Strongly disagree to 7=Strongly agree)	GUA02: a lack of effective guardianships to deter bullying perpetration.
	GUA03: an absence of competent guardianships to regulate bullying behaviors.
	GUA04: a lack of effective guardianships to tackle bullying acts.
Accessibility affordance	Facebook offers me the possibility to…
Self-developed, 7-point Likert scale	ACC01: reach a user.
(1=Strongly disagree to 7=Strongly agree)	ACC02: to get in touch with a user.
	ACC03: to connect a user.
Information retrieval affordance	Facebook offers me the possibility to…
Self-developed, 7-point Likert scale	INFO01: obtain the personal profile of a user.
(1=Strongly disagree to 7=Strongly agree)	INFO02: get up-to-date personal materials of a user.
	INFO03: retrieve information about someone's background information, preferences and hobbies.
Editability affordance	Facebook offers me the possibility to…
Self-developed, 7-point Likert scale	EDIT01: modify the contents I have posted.
(1=Strongly disagree to 7=Strongly agree)	EDIT02: revise the materials I have uploaded.
	EDIT03: amend the information I have created.
Association affordance	Facebook offers me the possibility to…
Self-developed, 7-point Likert scale	ASSO01: associate the agency of my posts to other users who have interacted with them.
(1=Strongly disagree to 7=Strongly agree)	ASSO02: shift the ownership of my contents among other users who have interacted with them.
	ASSO03: attribute the accountability of my materials shared on the platform to other users.

B. Assessment of Common Method Bias and Social Desirability Bias

We followed the methodological literature on common method bias [e.g., 12, 14, 15] and applied several procedural remedies and statistical remedies to minimize the threat of common method bias (CMB).

Regarding procedural remedies, first, measurement items used in this study were carefully developed through a rigorous instrument development process or modified based on the existing literature. Second, a pre-test was conducted to refine the items that were found unclear. Third, instructions of the survey questionnaire were kept simple, specific, and concise. Double-barreled questions were avoided. Fourth, items were randomized and different response formats (i.e., Likert scale, semantic differential, dragging bars) were applied in collecting responses for the variables. Respondents were not allowed to revisit the statements they attempted. Finally, a longitudinal survey setting was used to create a temporal separation by introducing a time lag (i.e., a 3-month interval) between collecting the data of the independent and dependent variables. We also followed the latest methodological guidelines to improve data quality with the MTurk online panel [e.g., 4, 7].

Regarding statistical remedies, a marker variable technique was used to detect the presence of CMB, following prior cyberbullying research [8]. A marker variable of organizational commitment, which is theoretically unrelated to the nomological network and has been used in detecting CMB in cyberbullying research [8], is included in the research model. The result shows an insignificant effect of organizational commitment as a marker variable on SNS bullying ($\beta = .028$, $p > .05$). We also examined the correlation matrix to determine if any of the correlations were above .9, which is evidence that CMB may exist [11]. The correlations are all significantly below the .9 threshold in the correlation matrix, with the presence of extremely low correlations (e.g., .013) (see Table C1). Taken together, the tests provide further evidence for the minimal threat of CMB in our data.

To minimize the threat of social desirability bias (SDB), respondents were assured that their responses would be anonymous and kept completely confidential. The statements were highlighted in the consent form before the survey was administered to make the respondents less likely to respond in a socially desirable way. To detect SDB, a Spearman correlation between the SDB score and SNS bullying was computed. SDB would have been a threat to the study if a significant negative correlation is identified. The following correlation is obtained: $rho_{SDB\text{-}SNS\ Bullying} = -.176$, $p < .05$. Although there is a significant negative correlation, the correlation is comparable with those SDB and other socially undesirable behaviors, such as compulsive buying ($rho = -.21$, $p < .01$) [13] and technology addiction ($rho = -.12$, $p < .05$) [17]. Although SDB existed in this study, it is mild and does not constitute a major issue.

C. Assessment of Reliability and Validity

We used the Cronbach's alphas to assess the reliability of the measures. As Table B1 shows, the Cronbach's alphas range between .835 to .911, exceeding the recommended threshold of .7 [5]. The result suggests that the measurement exhibits high internal consistency. We performed a factor analysis and pairwise chi-square difference tests to assess the convergent and discriminant validity of the measurement. Specifically, the factor analysis showed that items load strongly on their corresponding constructs, with low cross-loadings with other constructs (see Table C1 and Table C2) [5]. We then conducted pairwise chi-square tests for every possible pairing of constructs in the study. A significantly lower χ^2 value for the model with the unconstrained correlation, when compared with the constrained model, provides support for discriminant validity [18]. The chi-square tests show that all chi-square differences are statistically significant, indicating that the unconstrained model is better than the constrained model and hence each pair of constructs achieves sufficient distinction (see Table C3). Taken together, the measurement model demonstrates satisfactory reliability, convergent, and discriminant validity.

Table C1. Cronbach's Alphas, Descriptive Statistics, and Correlations

	Mean	Std. Deviation	Cronbach's Alpha	1	2	3	4	5	6	7	8
1. SNS bullying	1.820	1.436	.954	1							
2. Inclination to bully	1.564	1.061	.911	.658**	1						
3. Presence of suitable targets	3.624	1.364	.882	.440**	.349**	1					
4. Absence of capable guardianships	4.392	1.184	.854	.235**	.136*	.367**	1				
5. Accessibility affordance	5.984	.914	.940	-.251**	-.204**	-.102	.060	1			
6. Information retrieval affordance	4.762	1.242	.866	.143*	.171*	.281**	.104	.133*	1		
7. Editability affordance	5.457	1.133	.835	-.145*	-.051	.008	.275**	.344**	.102	1	
8. Association affordance	4.262	1.343	.890	.405**	.333**	.398**	.213**	.013	.434**	.170*	1

Note. *p < .05, **p < .01, ***p < .001

Table C2. Factor Loadings

Construct	Item	1	2	3	4	5	6	7	8
1. SNS bullying	SNSB01	***.796***	.287	.179	.100	-.182	-.027	-.089	.169
	SNSB02	***.724***	.478	.179	.136	-.079	.029	-.083	.223

	SNSB03	***.810***	.344	.169	.138	-.077	.102	-.058	.170
	SNSB04	***.668***	.541	.141	.077	-.074	.054	-.140	.188
2. Inclination to bully	PER01	.413	***.762***	.223	.004	-.194	.098	.026	.106
	PER02	.339	***.823***	.181	.027	-.084	.084	-.061	.216
	PER03	.401	***.796***	.098	.043	-.200	.065	-.080	.181
	PER04	.352	***.807***	.097	.032	-.186	.083	-.058	.155
3. Presence of suitable targets	TAR01	.034	.155	***.797***	.207	-.065	.053	-.007	.125
	TAR02	.187	.105	***.831***	.106	-.026	.162	.021	.154
	TAR03	.096	.275	***.760***	.093	-.060	.116	-.100	.239
	TAR04	.223	-.043	***.716***	.205	-.017	.125	.058	.062
4. Absence of capable guardianships	GUA01	.102	-.039	.179	***.856***	-.033	.030	.213	.006
	GUA02	.123	.014	.168	***.862***	-.005	.038	.188	.065
	GUA03	.092	.064	.151	***.879***	.045	.016	.089	.053
	GUA04	.019	.066	.100	***.830***	.082	.052	.028	.140
5. Accessibility affordance	ACC01	-.105	-.147	-.017	-.039	***.852***	.018	.143	.028
	ACC02	-.040	-.072	-.036	.053	***.862***	.092	.168	-.090
	ACC03	-.072	-.078	-.050	.065	***.877***	.081	.142	.064
6. Information retrieval affordance	INFO01	.115	.057	.097	-.044	.100	***.810***	.013	.182
	INFO02	-.066	.075	.105	.031	.087	***.869***	.013	.159
	INFO03	.015	.024	.083	.086	.003	***.845***	.069	.137
7. Editability affordance	EDIT01	-.042	-.134	-.019	.084	.193	.016	***.863***	.052
	EDIT02	-.122	.051	-.066	.145	.184	.048	***.857***	.129
	EDIT03	-.019	-.009	.065	.140	.096	.043	***.900***	.033
8. Association affordance	ASSO01	.056	.221	.130	.055	-.008	.166	.058	***.880***
	ASSO02	.267	-.090	.201	.089	.002	.318	.152	***.723***
	ASSO03	.135	.172	.103	.062	.014	.168	.068	***.883***

Table C3. Pairwise Chi-Square Test

		Chi-Squared Constrained Model	Statistics Unconstrained Model	df	X^2 difference	Sig
SNS bullying	Inclination to bully	119.741	99.539	1	2.202	***
	Presence of suitable target	6.737	49.769	1	1.968	***
	Absence of capable guardianships	105.040	9.671	1	14.369	***
	Accessibility affordance	174.759	7.654	1	104.105	***
	Information retrieval affordance	74.173	51.185	1	22.988	***
	Editability affordance	116.180	42.750	1	73.430	***
	Association affordance	72.721	61.596	1	11.125	***
Inclination to bully	Presence of suitable target	7.847	59.232	1	11.615	***
	Absence of capable guardianships	102.152	77.579	1	24.573	***
	Accessibility affordance	161.333	41.097	1	12.236	***
	Information retrieval affordance	44.587	25.263	1	19.324	***
	Editability affordance	147.603	78.959	1	68.644	***
	Association affordance	55.827	44.660	1	11.167	***
Presence of suitable target	Absence of capable guardianships	6.224	51.498	1	8.726	**
	Accessibility affordance	101.642	19.326	1	82.316	***
	Information retrieval affordance	31.169	17.510	1	13.659	***
	Editability affordance	92.681	37.158	1	55.523	***
	Association affordance	53.057	39.380	1	13.677	***
Absence of capable guardianships	Accessibility affordance	10.928	39.639	1	61.289	***
	Information retrieval affordance	71.564	34.281	1	37.283	***
	Editability affordance	6.571	37.255	1	23.316	***
	Association affordance	61.596	4.699	1	2.897	***
Accessibility affordance	Information retrieval affordance	7.923	12.387	1	58.536	***
	Editability affordance	62.648	9.381	1	53.267	***
	Association affordance	67.776	8.076	1	59.700	***
Information retrieval	Editability affordance	62.648	9.381	1	53.267	***

affordance	Association affordance	27.602	23.525	1	4.077	*
Editability affordance	Association affordance	53.653	22.683	1	3.970	***

Note. *p < .05, **p < .01, ***p < .001

D. Assessment of Multicollinearity

We checked the variance inflation factors (VIF) to help detect multicollinearity. As Table D shows, all of the constructs have a VIF well below the conservative threshold of 3.3 (ranging from 1.230 – 2.193) [1]. Therefore, we are confident that our model does not suffer from multicollinearity.

Table D. Collinearity Statistics

Construct	Tolerance	VIF
1. SNS bullying	.456	2.193
2. Inclination to bully	.549	1.820
3. Presence of suitable targets	.664	1.506
4. Absence of capable guardianships	.769	1.301
5. Accessibility affordance	.813	1.230
6. Information retrieval affordance	.771	1.298
7. Editability affordance	.761	1.315
8. Association affordance	.635	1.574

E. Conditional Effects of the Moderators

Table E. Conditional Effects of the Moderators

Main effect	Moderator		Effect	Standard error	*t*-value	*p*-value	Confidence interval	
	Presence of suitable targets	Absence of capable guardianships					Lower	Upper

Inclination to bully → SNS	-1SD		.024	.075	.320	.749	-.124	.172
bullying	1		.257	.060	4.270	.000	.139	.376
	+1SD		.491	.095	5.154	.000	.303	.678
Presence of suitable		-1SD	.024	.075	.320	.749	-.124	.172
targets → SNS bullying		1	.257	.060	4.270	.000	.139	.376
		+1SD	.491	.095	5.154	.000	.303	.678

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