



Does Instagram make you speak ill of others or improve yourself? A daily diary study on the moderating role of malicious and benign envy[☆]

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ARTICLE INFO

Handling Editor: Marianna Sigala

Keywords:

Gossiping
Self-improvement
Malicious envy
Benign envy
Instagram

ABSTRACT

Social networking site users are constantly exposed to the glamorized lifestyles and over-positive profiles of other people. A great deal of investigation has shown that the use of social networking sites is linked to the experience of upward comparison, yielding both threat-oriented and challenge-oriented responses. Yet, limited research has studied what determines these differential responses. To capture the intraindividual fluctuations in online activities, a daily diary study (1,328 diary reports) was conducted to examine the associations between Instagram use and two unexplored and sharply different reactions, namely 1) gossiping, a threat-oriented reaction that aims to pull others down, and 2) self-improvement, a challenge-oriented reaction that leads one to level up. Results indicated that daily Instagram use was positively associated with both gossiping and self-improvement. Critically, these within-person associations were subjected to the cross-level moderation effects of one's dispositional malicious and benign envy. Specifically, the link between Instagram use and gossiping was stronger among those high in dispositional malicious envy, while the link between Instagram use and self-improvement was stronger among those high in dispositional benign envy. Finally, a series of comparisons was conducted on the within-person associations and cross-level moderations to strengthen our understanding of Instagram use

1. Introduction

Social networking sites are powerful platforms, not only enabling contact with distanced friends and like-minded people, but also opening doors to the discovery of the unknown anywhere in the world. In the past decade, social networking sites have been widely utilized and become an indispensable part of our everyday lives. Given the extensive integration of social networking sites into daily life, much research has been devoted to examining if the use of social networking sites has harmful or beneficial effects on the users (Seabrook et al., 2016). In general, previous research has shown mixed findings concerning its effects (Kross et al., 2021). Some studies found that the use of social networking sites could lead to poor mental health, bringing anxiety (Labrague, 2014) and depression (Frison and Eggermont, 2017; Pantic et al., 2012); however, other researchers observed a beneficial effect, for example, being a source of inspiration or increasing psychological well-being (Apaolaza et al., 2013; Meier et al., 2020; Valenzuela et al., 2009).

In this research, we aimed at studying if the use of Instagram – one of

the most popular social networking sites in recent years – would affect two unexplored and sharply different outcomes, namely 1) gossiping, a negative and threat-oriented response, and 2) self-improvement, a positive and challenge-oriented response. To shed light on the paradoxical effect of Instagram use, we also examined the moderating effects of dispositional malicious and benign envy on the links between Instagram use and the tendencies to gossip and self-improve. Previous research has relied on one-shot measurement and recalled information in its study of Instagram use, gossiping, and self-improvement. We attempted to move beyond this, and thus conducted a daily diary study (a total of 1328 diary reports) to capture the intra-individual fluctuations in these constructs and examine if dispositional malicious and benign envy would moderate the associations between daily Instagram use and daily tendencies to gossip and self-improve.

[☆] This work was supported by the Internal Research Funds from the Hong Kong Polytechnic University (Project No.: P0046101 and P0041494).

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<https://doi.org/10.1016/j.chb.2023.107873>

Received 7 February 2023; Received in revised form 6 July 2023; Accepted 8 July 2023

Available online 14 July 2023

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2. Theoretical framework

2.1. Social comparison theory

Social comparison refers to the process of considering information about others in relation to the self (Wood, 1996). Festinger's (1954) social comparison theory posits that people have a general tendency to compare themselves to others to accurately evaluate themselves in terms of abilities and attributes. Much research has supported the existence of social comparison processes (see Buunk and Mussweiler, 2001; Wills, 1986). Based on the theoretical perspectives under social comparison theory, such as construal theory (Collins, 1996), downward comparison theory (Wills, 1981), and the selective accessibility model (Mussweiler, 2003), social comparison processes can be classified in terms of type (upward and downward) and reaction (contrast and assimilation). Upward comparison is when people compare themselves to those they perceive to be superior, whereas downward comparison occurs with those perceived to be inferior. This social comparison will cause the comparer's self-evaluation to either move toward the comparison standard (i.e., assimilation) or away from the standard (i.e., contrast). Gerber et al. (2018) meta-analyzed findings from 145 studies in social comparison research and revealed that it is dominant for people to make upward comparison and react with contract responses (i.e., it is common for people to compare themselves to those they perceive to be superior and yield a negative self-evaluation).

In daily life, social comparison plays a significant role in the development of one's social life across cultures (Cheng et al., 2021). In the present digital age, the likelihood of engaging in social comparison is intensified on social networking sites as users are presented with countless opportunities to compare themselves with social others. In the literature, social comparison can explain how individuals are affected by social networking sites that contain a great deal of social information (Verduyn et al., 2020). Specifically, upward comparison, which refers to the comparison of oneself with someone perceived to be superior (Wheeler, 1966), has been shown to be a common phenomenon on social networking sites because its users are often exposed to the successes, rather than the failures, of others (Kross et al., 2013; Lin and Utz, 2015).

2.2. Social comparison on social networking sites

Upward comparison on social media can be harmful and problematic (Gerber et al., 2018; Verduyn et al., 2020). For instance, social networking site users are likely to engage in upward comparison when frequently exposed to the glamorized lifestyles of others, and will contrast themselves with these over-positive profiles (Buffardi and Campbell, 2008; Fan et al., 2019). This can lead to a feeling of inferiority and ego deflation (Collins, 1996). Previous research also revealed the negative effect of social networking sites on various psychological well-being indicators, such as increased negative emotions (Chou and Edge, 2012) and more depressive symptoms (Lup et al., 2015). Yoon et al. (2019) meta-analyzed 33 studies with a total sample size of 15,881 individuals and found 1) a positive association between the usage of social networking sites (i.e., time spent on and frequency of checking of social networking sites) and depression and 2) a medium-size correlation between upward comparison on social networking sites and depression. Baek et al. (2013) found that the number of parasocial relationships on social networking sites was associated with different interpersonal and behavioral outcomes, such as more loneliness, less interpersonal trust, and more addictive behaviors (see also Andreassen and Pallesen, 2014; Griffiths et al., 2014).

On the other hand, some studies have pointed out that upward comparison on social networking sites might have a positive impact. For instance, usage of and self-disclosure on social networking sites was sometimes found to be positively correlated with psychological well-being, such as increasing life satisfaction (Apaolaza et al., 2013; Wang, 2013), happiness (Kim et al., 2014), and positive affect (Lee et al.,

2011). Moving beyond a cross-sectional design, Frison and Eggermont (2015) used a two-wave panel design and showed that an active use of social networking sites was temporally associated with a lower level of depressive mood, while Wenninger et al. (2014) used a daily diary design and found that an active use of social networking sites predicted a higher level of life satisfaction. As a whole, through summarizing 39 relevant studies, Verduyn et al. (2017) concluded that there is a positive relationship between the active use of social networking sites and subjective well-being. Previous studies also revealed that the use of social networking sites may benefit interpersonal relationships, such as by yielding more social support (Ellison et al., 2007; Steinfield et al., 2008), creating stronger bonds with friends (Burke et al., 2010), building a strong sense of connectedness, and reducing loneliness (Matook et al., 2015; Ryan and Xenos, 2011).

3. Background

Instagram is becoming one of the more popular and influential social networking sites (Edison Research, 2022; Hou and Shiau, 2020; Richter, 2019). Instagram allows its users to create posts with pictures, videos, and short captions to convey their feelings and thoughts. These posts appear in the user's personal profile and can be seen by their followers (Lup et al., 2015). This unique feature of photo- and video-dominant content on Instagram allows people to easily create an idealized profile, delivering a romanticized view of their life to their followers. Therefore, Instagram users might be likely to engage in upward social comparison.

3.1. Instagram: The good and the bad

In keeping with findings about the impact of other social networking sites, the use of Instagram has also been shown to have its benefits and detriments. For instance, Pittman and Reich (2016) showed that the use of Instagram was associated with lower loneliness and higher happiness and life satisfaction. Mendini et al. (2022) also showed that the more time spent by the user on Instagram, the higher the levels of gratitude and altruism they had. On the other side, however, Barac and Maekawa (2017) revealed that Instagram users experienced psychological pain, hostility, and dissatisfaction when they compared themselves with other users' idealized images. In a similar vein, Sherlock and Wagstaff (2019) showed that Instagram use is associated with lower self-esteem, more depressive symptoms, physical appearance anxiety, and body dissatisfaction. More explicitly, they showed that social comparison orientation acts as the mediator for these associations.

Given that the effect of Instagram use has been shown to be paradoxical in that both negative and positive outcomes can result, the present research attempted to study two behavioral tendencies as the potential outcomes of Instagram use, namely, the tendencies to gossip and self-improve, two tendencies which are quite different in the focus of the target. Gossiping reflects a more negative and threat-oriented response that aims to pull others down, whereas self-improvement highlights a more positive and challenge-oriented response that leads a person to level up (Lange and Crusius, 2015; Latif et al., 2021; Van de Ven et al., 2009). Previous research has studied the tendencies to gossip (e.g., Festl et al., 2017; Okazaki et al., 2014) and self-improve (e.g., Cramer et al., 2016; Song et al., 2019), but has done so separately and through the use of different social networking sites than Instagram.

4. Research model and hypotheses

4.1. Instagram use and gossip

Gossiping refers to the process of communicating information about the new, deviant traits or behaviors of a target who is absent or unaware of the content (Arno, 1980; Dores Cruz et al., 2021). As an everyday element of human communication, gossiping has been shown to help

relieve stress (Grosser et al., 2010) and create social bonds among groups (Dunbar, 2004). Although gossiping can build up and consolidate social friendships, provide entertainment, and facilitate the exchange of information (Dunbar, 1996; Suls and Miller, 1977), it is often used as an indirect attack on others through damaging their reputation with or without justification (Archer and Coyne, 2005; Ingram, 2014). Because it can be used to attack and defame individuals, gossiping is regarded as a conversational strategy to interpersonally “pull down” others (Dunbar, 2004).

Based on their latent transition analysis of three-wave panel data, Festl et al. (2017) identified gossiping as one of the most common elements of cyberbullying, indicating a link between social networking sites and gossiping. More explicitly, Okazaki et al. (2014) found that online gossiping which strongly reflected the poster’s desire for social enhancement was positively associated with their identification of and engagement with social networking sites. These findings are aligned with the behavioral reactions in a comparison process proposed by Tesser (1988). The social comparison that arises from the posts on social networking sites may lead the site users to lower their self-evaluation, thereby inducing a desire to restore it. To bounce back, gossiping may be employed to pull down others. Hence, it is expected that the use of Instagram, with its portraits of others’ ‘perfect’ lives, would be associated with a larger tendency to gossip. Hence, we propose the following hypothesis (see also Fig. 1).

H1a. *Instagram use would be positively associated with gossiping.*

A new function has been created on Instagram called “Co-Watching”, and this may make gossiping even more prevalent. With this function, Instagram users can view posts together with their friends while video chatting with them. This new group function could encourage users to comment on and gossip about others’ shared posts on Instagram.

4.2. Instagram use and self-improvement

Their regular exposure to various idealized portraits of others may lead Instagram users to engage in upward social comparison. Taking such profiles as role models, one may be inspired to become better and be motivated to self-improve (Lockwood and Kunda, 1997). Self-improvement is the action of being inspired to become better, by learning or doing something to improve an aspect of the self (Cramer et al., 2016). This could happen in response to a social comparison that could be self-threatening (Sedikides and Hepper, 2009). Previous studies revealed that the ability to appreciate and see the good side of others (i.e., being high in gratitude) was positively associated with the tendency to self-improve (Armenta et al., 2017). Thus, self-improvement generally reflects a positive, optimistic, and challenge-oriented reaction in

response to social comparison. Indeed, Schaubroeck and Lam (2004) demonstrated that individuals, in response to upward social comparisons, were motivated to put effort into enhancing their performance so as to turn the tide on the referent.

Therefore, it is expected that the use of Instagram, with its idealized lifestyle content, would be associated with a larger tendency to self-improve. Two previous studies of social networking sites explicitly demonstrated empirical evidence for this association. Cramer et al. (2016) found that the use of Facebook (viz., posting content and reading posts) was positively associated with the motivation to self-improve, while Latif et al. (2021) found that the daily hours spent on various social networking sites was correlated with a higher tendency to self-improve. Furthermore, Meier and Schäfer (2018) provided some indirect evidence for this, showing a relationship between social comparison on Instagram and inspiration gained from the posts of other users (e.g., being inspired to do something new). As such, we hypothesize that (see also Fig. 1).

H1b. *Instagram use would be positively associated with self-improvement.*

It is possible that, based on the findings from other social networking sites, the use of Instagram might also lead to contradictory consequences for its users. After engaging in upward comparison, Instagram users might wish to pull others down by gossiping or level themselves up by engaging in self-improvement. Built upon these associations, a follow-up question is this: What determines the differential reactions to Instagram use? In the present research, we proposed the two forms of dispositional envy (viz., malicious and benign envy) as the moderators to understand the contrasting consequences of Instagram use and determine when it may elicit gossiping or self-improvement.

4.3. The moderating role of dispositional envy on Instagram Use

Envy occurs between two related persons (i.e., the envier and the envied). The feeling of envy is typically elicited when one lacks a desired thing (e.g., an intangible achievement or a tangible object) that is possessed by another person (Cohen-Charash, 2009). Through engaging in upward social comparisons on the envied objects, one experiences envy, which reflects an emotional reaction made up of frustration, shame, and anger (Crusius et al., 2019). The experience of envy involves two major components, namely a sense of inferiority and hostility (Crusius et al., 2019). In the face of the upward comparison, a feeling of inadequacy is generally magnified (Neufeld and Johnson, 2016; Vrabel et al., 2018). Besides, in the experience of envy, the desired possession in upward comparison represents a frustrated desire, as it is typically considered as unattainable, while the other’s superiority is regarded as unjust and unfair (Van de Ven et al., 2012). The frustration and perceived injustice breed a sense of hostility (De Clercq et al., 2018; Smith et al., 1999).

While many individuals may experience state envy from time to time, some people reveal a habitual inclination to feel envy across situations (Lange, Weidman, and Crusius, 2018). This chronic tendency reflects a construct termed dispositional envy which has been shown to be a stable personality trait (Smith et al., 1999). Previous research showed that people high in dispositional envy were more sensitive to the signs highlighting their inadequacy and more likely to engage in upward social comparisons (Collins, 1996; Smith et al., 1994). Thus, individuals who endorse different levels of dispositional envy may interpret the social information on Instagram differently, yielding different reactions to it (Schreurs et al., 2021; Wenninger et al., 2021). Lange and Crusius (2015) classified dispositional envy into two separate forms, namely malicious and benign envy. Although both forms of envy reflect the painful emotions experienced in response to upward comparison, they differ in terms of the motives and behavior manifested to level the difference between oneself and superior others (Van de Ven et al., 2009). The present research attempted to examine whether people who have different levels of dispositional malicious and benign envy would exhibit

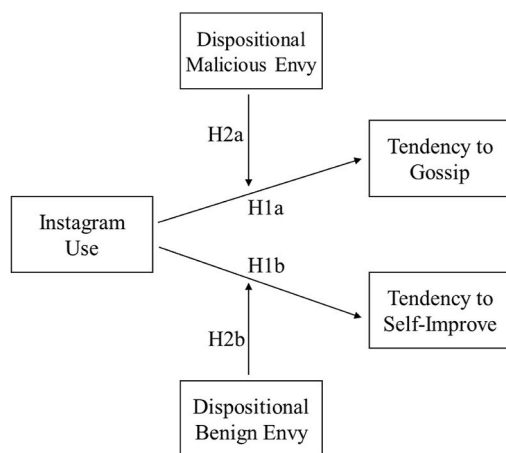


Fig. 1. Conceptual model of the moderation effects of dispositional envy on the associations of Instagram use with gossiping and self-improvement.

different reactions to their use of Instagram, statistically implying the moderating effects of dispositional malicious and benign envy on Instagram use.

4.3.1. Dispositional malicious envy moderates the effect of Instagram Use on gossiping

Dispositional malicious envy follows the conventional conceptualization of envy, which emphasizes feelings of inferiority and hostility (Lange and Crusius, 2015; Smith et al., 1999). The feelings inherent in the experience of envy elicit the goal of levelling the difference between oneself and superior others (Van de Ven, 2016). To pursue this goal, people high in dispositional malicious envy are motivated to pull the envied targets down through denigrating their advantages (Van de Ven et al., 2009). Aligned with this conceptualization, previous research consistently revealed the negative side of malicious envy. For instance, dispositional malicious envy was associated with various maladaptive social tendencies, such as more schadenfreude (Krizan and Johar, 2012; Lange et al., 2018b), increased aggression (Rentzsch and Gross, 2015; Shoham et al., 2015), fewer prosocial behaviors (Yu et al., 2018), and more social undermining (Duffy et al., 2012; Salovey and Rodin, 1984). Dispositional malicious envy has also been shown to negatively associate with different indicators of psychological well-being, such as self-esteem (Vrabel et al., 2018), hedonic well-being (Ng et al., 2020), and eudaimonic well-being (Ng et al., 2021).

As previously discussed, frequent Instagram users are regularly exposed to the idealized portraits of others (Cramer et al., 2016), and this can elicit a higher tendency to gossip, reflecting a negative and threat-oriented focus to pull others down. Hence, in light of the conceptualization of malicious envy, it is suggested that among those who are high in dispositional malicious envy, more Instagram use may bring about more gossiping as a means to level the difference between oneself and superior others via denigrating and pulling down the superior others. It has been found that malicious envy was associated with a strong perception of low deservingness of advantaged others and a low sense of control over situations (Briki, 2018; Van de Ven et al., 2011, 2012). Taken together, people who are high in dispositional malicious envy may regard the idealized lifestyles seen on Instagram as being undeserved by others and unattainable to themselves. As a consequence, after being exposed to these idealized lifestyles, they may be motivated to pull these targets down through showing a higher tendency to gossip, denigrating the advantaged others, and yielding a moderating effect of dispositional malicious envy on the link between Instagram use and gossiping. We therefore propose the following hypothesis (see also Fig. 1).

H2a. *Dispositional malicious envy would positively moderate the association between Instagram use and gossiping, in which the association would be stronger among those high in dispositional malicious envy.*

4.3.2. Dispositional benign envy moderates the effect of Instagram Use on self-improvement

Similar to malicious envy, benign envy also reflects a painful experience which motivates one to level the difference between oneself and superior others (Van de Ven, 2016). Unlike malicious envy, benign envy lacks ill will, hostility, and resentment (Lange and Crusius, 2015). Therefore, instead of pulling others down, people high in dispositional benign envy tend to pull themselves up to reduce the difference between themselves and superior others (Van de Ven et al., 2009). Previous studies revealed that dispositional benign envy is more positive and optimistic in nature. For instance, Lange and Crusius (2015) found that dispositional benign envy was positively associated with the achievement motive of hope for success rather than fear of failure. They also revealed that people high in dispositional benign envy tended to set higher goals, which in turn led to better task performance (see also Van de Ven et al., 2011). Moreover, Crusius and Lange (2014) indicated that people experiencing benign envy are motivated to allocate more

attention towards the means to improve themselves, implying that people high in dispositional benign envy are more willing to accept challenges.

Rather than showing a tendency to gossip, some Instagram users demonstrated a more challenge-oriented tendency of self-improvement (Latif et al., 2021; Meier and Schäfer, 2018). Conceptually, this link could be related to one's level of dispositional benign envy. Specifically, it is hypothesized that among those who are high in dispositional benign envy, more Instagram use may bring about the self-improvement that serves to level the difference between oneself and superior others. In contrast to dispositional malicious envy, dispositional benign envy elicits a feeling of admiration and perceived deservingness towards superior others (Lange et al., 2018a) as well as a strong sense of control over situations (Briki, 2018; Van de Ven et al., 2011). As a whole, people high in dispositional benign envy may subjectively consider those idealized portraits of other Instagram users as deserving and believe that they are also capable of attaining superiority. Consequently, they will show a stronger tendency to self-improve, yielding a moderating effect of dispositional benign envy on the link between Instagram use and self-improvement. As such, the following hypothesis is formulated (see also Fig. 1).

H2b. *Dispositional benign envy would positively moderate the association between Instagram use and self-improvement, in which the association would be stronger among those high in dispositional benign envy.*

5. Significance of the present research

To test the proposed hypotheses, a daily diary study was conducted among young adults, examining 1) whether Instagram use would be associated with tendencies to gossip and self-improve (i.e., H1a and H1b in Fig. 1) and 2) whether these associations would be moderated by dispositional malicious and benign envy (see H2a and H2b in Fig. 1). Built upon the present daily diary study on Instagram, the significance of this research was fourfold.

First, although Facebook and Twitter have long been the most popular social networking sites, Instagram has begun to rival them as the most influential site in the past few years (Edison Research, 2022; Hou and Shiau, 2020; Richter, 2019). The number of Instagram users, mostly young people aged between 18 and 29, has shown an increase of 23.8% in recent years (McLachlan, 2022; Pew Research Center, 2022), while the number of young users of Facebook has shown a significant drop (Huang and Su, 2018; Williamson, 2022). Besides, as revealed by Alhabash and Ma (2017) and Waterloo et al. (2018), users are more motivated to self-express (e.g., tell others about themselves and show their personality) and express positive emotions (e.g., joy and pride) on Instagram rather than on Facebook and Twitter. The social information received on Facebook and Twitter seems to be more diverse (e.g., news and forums) and does not necessarily reflect one's lifestyle. Overall, Instagram has a growing user base and distinctive features which favor the depiction of a visually appealing life (e.g., various beauty filters for photos and videos) and facilitate social comparison (e.g., the co-watching function). Therefore, in the present research, the focus on Instagram among young adults (i.e., the dominant users of this platform) has the benefit of capturing more of the dynamics in the social comparison processes.

Second, much of the previous research has demonstrated that the use of social networking sites (e.g., Facebook, Twitter, and Instagram) influences various outcomes through the social comparison process (for a review, see Appel et al., 2016; Verdun et al., 2020). However, only limited research has studied whether a general use of social networking sites is linked to the tendencies to gossip and self-improve, which have been shown to associate strongly with social comparison (Pavlova et al., 2017; Sedikides and Hepper, 2009; Wert and Salerno, Laran, and Janiszewski, 2018; Zhang and Zhu, 2021). More importantly, no previous research has quantified and compared the impact of Instagram on both

gossiping and self-improvement. Therefore, in the present research, the examination of H1a and H1b is novel.

Third, it is clear that a person's activity on social networking sites differs from time to time, yielding a substantial degree of intra-individual variation (Cingel et al., 2022; Steers et al., 2014; Verduyn et al., 2015). Moving beyond both a cross-sectional design and a retrospective design, which rely on one-shot measurements or recalled information (e.g., Fejes-Vékássy et al., 2020; Lee, 2011), we employed a diary design as this provides more reliable data recorded closer in time to the online activities. With a diary design, we could capture the intra-individual variations in Instagram use documented in previous research (Chiu and Yuan, 2021; Garcia et al., 2022) and investigate whether these daily fluctuations in Instagram use would affect the daily tendencies to gossip and self-improve (Demerouti et al., 2015; 2020; Rodríguez-Muñoz et al., 2017; Thøgersen-Ntoumani et al., 2021). Hence, in the present research, the use of a daily diary design had the advantage of quantifying the possible fluctuations of the variables of interest across time.

Fourth, although the link between social networking sites and the experience of envy has been demonstrated in the literature (see Weninger et al., 2021), most of these studies did not differentiate between malicious and benign envy (e.g., Choi and Kim, 2021; Chou and Edge, 2012; Verduyn et al., 2015). Among those studies that examined dualistic envy and social networking sites, most had either utilized a cross-sectional design (e.g., Lin and Utz, 2015; Meier and Schäfer, 2018; Noon and Meier, 2019) or focused on the state envy elicited in the experimental procedure (e.g., Lim and Kim, 2018; Lim and Yang, 2019; Lin, 2018; Meier et al., 2020). Simply put, no previous research had employed a diary design to study whether dualistic envy would regulate the effect of daily use of social networking sites across a period of time. As a result, the present research makes a novel contribution in examining the cross-level moderation effects of dispositional malicious and benign envy, as stated in H2a and H2b.

6. Method

6.1. Participants and procedure

A total of 250 university students (168 females) were recruited in Hong Kong ($M_{age} = 20.78$, $SD = 2.23$). All participants indicated that they were active Instagram users. Upon recruitment, participants were instructed to complete the questionnaire consisting of the following baseline measures and report demographic information, such as age and gender. Around one week after the baseline survey, participants started a daily diary survey which continued for three consecutive weeks. In the diary survey, they were invited to complete the following diary measures two times a week, yielding a total of six diary reports throughout the study. Among the 250 participants, seventeen participants failed to complete more than half of the diary reports and were thus removed from the study, yielding a final sample size of 233 participants. On average, they completed 5.69 diary reports out of the maximum of six reports. Informed consent was obtained in advance from all participants. The sample size in this study should provide adequate statistical power to examine the key research question.¹

¹ A priori power analysis was conducted using the Monte Carlo simulation method through *Mplus* (Muthén and Muthén, 1998–2017). Given a multilevel model with a maximum of six diary reports, we assumed a moderate size for the lower-order effects ($f^2 = 0.150$) and a small-to-moderate size for the cross-level moderation effects ($f^2 = 0.085$) in the power analysis. These values correspond to 13.0% ($0.150/(1 + 0.150)$) and 7.8% ($0.085/(1 + 0.085)$) explained variance in the outcomes (Cohen, 1988). To obtain at least 90% of statistical power to test the effects of interest in the model, a sample of 180 participants was required. Thus, the current sample size should provide adequate statistical power to test the hypothesized model.

6.2. Measures

In the baseline survey, participants completed instruments measuring dispositional malicious envy, dispositional benign envy, and covariates, while in the diary survey, they completed instruments measuring daily Instagram use, and daily tendencies to gossip and self-improve. All the items and the related references are listed in the Appendix (Table A1).

6.2.1. Baseline measures

Dispositional Benign and Malicious Envy. The 10-item Benign and Malicious Envy Scale (Lange and Crusius, 2015) was used to measure the dispositional traits of malicious and benign envy. The items were anchored on a 5-point scale ranging from 1 (*strongly disagree*) to 5 (*strongly agree*). Sample items include “If someone has superior qualities, achievements, or possessions, I try to attain them for myself” (for benign envy; $\alpha = 0.76$) and “Seeing other people's achievements makes me resent them” (for malicious envy; $\alpha = 0.79$).

6.2.2. Diary measures

Daily Instagram Use. The 6-item Instagram Activities Scale (Yang, 2016) was used to measure daily engagement in various Instagram activities. The items capture three types of Instagram activities: interaction, browsing, and broadcasting. The items were anchored on a 5-point scale ranging from 1 (*never*) to 5 (*a lot*). Sample items include “Tag others in your posts or comments” (for Instagram interaction), “Check out others' profiles without leaving comments” (for Instagram browsing), and “Post/Upload on your profile without tagging anyone” (for Instagram broadcasting) ($\alpha = 0.87$).

Daily Tendency to Gossip. To reduce the risk of fatigue and limit the attrition rate, we selected four key items from the 20-item Tendency to Gossip Questionnaire (Nevo et al., 1993). The items in the Tendency to Gossip Questionnaire focus on four areas, namely physical appearance, achievement, social information, and sublimated gossip. We selected one item from each area based on 1) having an applicable meaning in the context of Instagram and 2) yielding the highest factor loading in Nevo et al. (1993). For instance, items that were not applicable to the Instagram context (e.g., I read gossip columns in newspapers) were not selected. Participants responded to the items on a 7-point scale ranging from 1 (*never*) to 7 (*always*). The four selected items are “I talk to friends about other people's clothes”, “I talk to friends about other people's grades and intellectual achievements”, “I talk to friends about the problems some of our friends have at work”, and “I analyze with my friends the motives and reasons for other people's behaviors” ($\alpha = 0.86$).

Daily Tendency to Self-Improve. The 5-item Self-Improvement Motivation Scale (Breines and Chen, 2012) was used to assess the participants' daily tendency to self-improve. The items were adapted to reflect their commitment and desire to make an effort to improve. The items were anchored on a 7-point scale ranging from 1 (*strongly disagree*) to 7 (*strongly agree*). Sample items include “I will do my best to become more like the person I would ideally like to be” and “I feel no need to do anything to become more like the person I would ideally like to be” (reverse item) ($\alpha = 0.87$).

6.2.3. Covariates

Numbers of Instagram Followers and Followeres. Participants were asked to report the numbers of their Instagram followers and followeres. To ensure the accuracy of their report, they were asked to check on their Instagram page before reporting the numbers. In the present sample, the number of Instagram followers ranges from 68 to 6212 ($M = 868.51$, $SD = 497.68$), while the number of Instagram followeres ranges from 98 to 1480 ($M = 619.68$, $SD = 286.21$).

Personality Traits. The 20-item Mini-International Personality Item Pool (Donnellan et al., 2006) was used to measure the five-factor personality traits. The items were anchored on a 5-point scale ranging from

1 (*does not describe me at all*) to 5 (*describes me very well*) ($\alpha = 0.67, 0.43, 0.75, 0.65, \text{ and } 0.75$ for openness to experience, conscientiousness, extraversion, agreeableness, and neuroticism, respectively).

6.3. Data analysis plan

To test our hypotheses, two sets of multilevel models were established, namely a multilevel model with random intercepts and fixed slopes for H1a and H1b and a multilevel model with cross-level moderation effects on random intercepts and slopes for H2a and H2b. All the multilevel models were tested using a multilevel structural equation modeling method in which variables were decomposed into two orthogonal latent variables of within-level and between-level components (Muthén, 1994; Muthén and Asparouhov, 2011).

Specifically, in the multilevel model for H1a and H1b, the daily tendencies to gossip and self-improve were regressed on daily Instagram use. In the multilevel model for H2a and H2b, the random slopes capturing the within-person associations between daily Instagram use and tendencies to gossip and self-improve were regressed on dispositional malicious and benign envy, quantifying the cross-level moderation effects. To further delineate the moderation pattern, the within-person associations between daily Instagram use and tendencies to gossip and self-improve were tested at the two levels in dispositional malicious and benign envy (*viz.*, 1 SD above or below mean value).

7. Results

The data collected in this diary study had a multilevel structure with 1328 diary reports (Level 1 within-person) nested within 233 participants (Level 2 between-person). As shown in Table 1, the intraclass correlations of the variables range from 0.31 to 0.88, with an average of 0.62. Overall, it indicated that around 38% of total variance of the variables was generally attributed to the intra-individual fluctuations across diary reports, while around 62% was explained by the inter-individual differences. Therefore, multilevel modeling should be used to account for the nested data structure in this diary study.

7.1. Associations of Instagram use with tendencies to gossip and self-improve

Bivariate correlations among the key variables at both within- and between-person levels are presented in Table 1. At the within-person level, Instagram use was positively correlated with both tendencies to gossip, $r = .13, p < .001$, and self-improve, $r = 0.14, p < .024$, indicating that the daily use of Instagram was associated with a stronger tendency to gossip and self-improve on that day. At the between-person level, Instagram use was also positively correlated with both tendencies to gossip, $r = .32, p = .001$, and self-improve, $r = 0.40, p < .001$, indicating that people with more Instagram use across a period of time would generally gossip and self-improve more.

To examine hypotheses 1a and 1b (see Fig. 1), a multilevel model with random intercepts and fixed slopes was established to regress the tendencies to gossip and self-improve on Instagram use. Consistent with the bivariate correlations, Instagram use positively predicted both tendencies to gossip, $b = .27, p < .001$, 95% CI [0.12, 0.42], and self-improve, $b = 0.13, p = .037$, 95% CI [0.01, 0.25], at the within-person level. These results supported the hypotheses 1a and 1b that the daily fluctuation in Instagram use was positively associated with the daily fluctuation in gossiping and self-improvement. Additional analysis

was also conducted to compare the strength of the two associations. Results revealed no significant differences between the two associations, $b = 0.14, p = .135$, 95% CI [-0.04, 0.33], indicating that Instagram use equivalently predicted both tendencies to gossip and self-improve at the within-person level.²

Although the between-level analyses were not the main focus in this investigation, we also regressed the tendencies to gossip and self-improve on Instagram use at the between-person level for completeness. Aligned with the bivariate correlations, individuals with a more frequent use of Instagram generally showed the stronger tendencies to gossip, $b = .31, p < .001$, 95% CI [0.14, 0.48], and self-improve, $b = 0.69, p < .001$, 95% CI [0.44, 0.94]. Instagram use was also found to predict self-improvement more strongly than gossiping at the between-person level, $b = -0.38, p = .010$, 95% CI [-0.66, 0.09].

7.2. Cross-level moderation effects of dispositional malicious and benign envy

Built upon the within-person associations between daily Instagram use and tendencies to gossip and self-improve, we further examined whether these within-person associations would vary across individuals who had different levels of dispositional malicious and benign envy (see hypotheses 2a and 2b in Fig. 1). To do this, we employed a two-step approach to test whether dispositional malicious and benign envy at the between-person level would affect the random effect of daily Instagram use on the daily tendencies to gossip and self-improve, yielding the tests of cross-level moderation effects of dispositional malicious and benign envy.

In Step 1, a multilevel model with random intercepts and slopes was established and this revealed that daily Instagram use positively predicted both daily tendencies to gossip, $b = .27, p < .001$, 95% CI [0.12, 0.42], and self-improve, $b = 0.18, p = .001$, 95% CI [0.07, 0.29] (see the within-person panel in Fig. 2). Also, the strength of the two predictions did not differ, $b = 0.09, p = .273$, 95% CI [-0.07, 0.26], being consistent with the findings in the multilevel model with random intercepts and fixed slopes.

In Step 2, dispositional malicious and benign envy was included in the model to explain the random effect of daily Instagram use on the daily tendencies to gossip and self-improve. Consistent with our expectations, dispositional malicious envy showed a cross-level moderation effect on the within-person associations between daily Instagram use and daily tendency to gossip, $b = .05, p = .017$, 95% CI [0.01, 0.09], while dispositional benign envy did not, $b = -0.04, p = .098$, 95% CI [-0.08, 0.01] (see the between-person panel in Fig. 2). Specifically, dispositional malicious envy exacerbated the positive link between daily Instagram use and daily tendency to gossip. Among those high in dispositional malicious envy (1 SD above mean value), $b = 0.25, p = .001$, 95% CI [0.11, 0.40], the effect of daily Instagram use on tendency to gossip was stronger than that among those low in dispositional malicious envy (1 SD below mean value), $b = 0.19, p = .010$, 95% CI [0.05, 0.33].

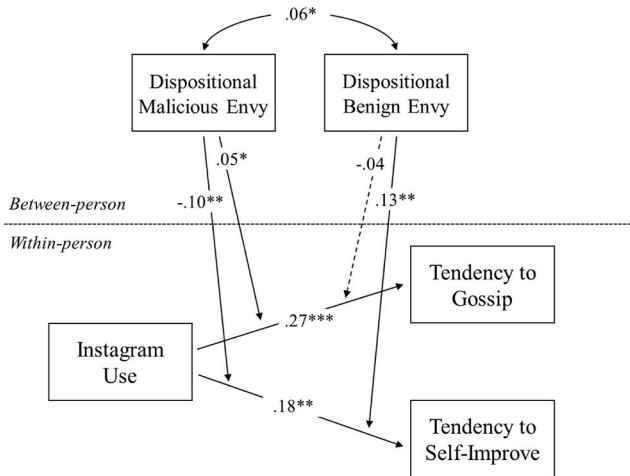
Dispositional benign envy also exerted a cross-level moderation effect on the within-person associations between daily Instagram use and daily tendency to self-improve, $b = 0.13, p = .008$, 95% CI [0.03, 0.22]. Dispositional benign envy strengthened the positive effect of daily Instagram use on tendency to self-improve. Among those high in dispositional benign envy (1 SD above mean value), daily Instagram use positively predicted tendency to self-improve, $b = 0.24, p = .001$, 95% CI [0.10, 0.37], whereas the effect was not significant among those low in

² We conducted additional analyses to examine if daily Instagram use had a lagged effect on the tendencies to gossip and self-improve in the next daily report. Results indicated that Instagram use had no lagged effects on either gossiping, $b = .04, p = .363$, 95% CI [-0.05, 0.12], or self-improvement, $b = 0.03, p = .684$, 95% CI [-0.11, 0.17] at the within-person level.

Table 1
Summary statistics, intraclass and bivariate correlations among key measures.

	<i>M</i>	<i>SD</i>	<i>ICC</i>	1	2	3	4	5
1. Dispositional Malicious Envy	2.71	0.64	–	–	–	–	–	–
2. Dispositional Benign Envy	3.75	0.53	–	.17*	–	–	–	–
3. Instagram Use	3.77	0.73	.68	.23**	.43***	–	.13***	.14*
4. Tendency to Gossip	3.35	1.06	.31	.15†	.08	.32**	–	.16***
5. Tendency to Self-Improve	4.55	1.10	.88	–.15*	.42***	.40***	.18†	–

Note. The within-level correlations are presented above the diagonal while the between-level correlations are presented below the diagonal. † $p < .010$. * $p < .05$. ** $p < .01$. *** $p < .001$.



Note. The coefficients are unstandardized estimates, and the solid lines indicate statistical significance. * $p < .05$, ** $p < .01$, *** $p < .001$.

Fig. 2. Multilevel Model Examining the Cross-Level Moderation Effects of Dispositional Malicious and Benign Envy

Note. The coefficients are unstandardized estimates, and the solid lines indicate statistical significance. * $p < .05$, ** $p < .01$, *** $p < .001$.

dispositional benign envy (1 SD below mean value), $b = 0.10$, $p = .064$, 95% CI [-0.01, 0.21]. We also conducted an additional test to compare the strength of the two hypothesized cross-level moderation effects in hypotheses 2a and 2b, and found no significant differences, $b = -0.08$, $p = .181$, 95% CI [-0.19, 0.04].

Interestingly, other than observing the positive cross-level moderation effects in hypotheses 2a and 2b, we also observed a negative cross-level moderation effect of malicious envy on the link between daily Instagram use and daily tendency to self-improve, $b = -0.10$, $p = .004$, 95% CI [-0.16, -0.03]. The negative cross-level moderation effect indicated that dispositional malicious envy weakened the positive effect of daily Instagram use on daily tendency to self-improve. Particularly, daily Instagram use had no effect on tendency to self-improve among those high in dispositional malicious envy (1 SD above mean value), $b = 0.11$, $p = .102$, 95% CI [-0.02, 0.24], whereas daily Instagram use did positively predict daily tendency to self-improve among those low in dispositional malicious envy (1 SD below mean value), $b = 0.23$, $p < .001$, 95% CI [0.12, 0.34]. Finally, additional multilevel models were tested with the control of age, gender, numbers of Instagram followers and followees, and the five personality traits. After controlling these covariates, all the estimates and statistical significance of path coefficients remained consistent. The results of a series of multilevel models are also presented in the Appendix (Table A2).

8. Discussion

Previous research had indicated that Instagram use could lead to both positive and negative consequences for the user. In the present research, we investigated the effects of Instagram use on the tendency to self-improve, which reflects a more positive and challenge-oriented reaction, as well as the tendency to gossip, which reflects a more negative and threat-oriented reaction. Since social comparison plays an important part in social network use, we also studied whether dispositional malicious and benign envy, which elicit different responses to social comparison, would moderate the associations of Instagram use with gossiping and self-improvement. With a daily diary design (a total of 1328 diary reports), we examined the intra-individual links of daily Instagram use with the daily tendencies to gossip and self-improve, and the cross-level moderation effects of dispositional malicious and benign envy on these intra-individual links. Aligned with our expectations, we found that daily Instagram use positively predicted both daily tendencies to gossip and self-improve. Interestingly, Instagram use equally predicted both tendencies to gossip and self-improve at the within-person level while it had a stronger effect on self-improvement than gossiping at the between-person level. Furthermore, dispositional malicious envy positively moderated the link between daily Instagram use and gossiping, indicating that among those high in dispositional malicious envy, daily Instagram use predicted gossiping more strongly. In contrast, dispositional benign envy positively moderated the link between daily Instagram use and self-improvement, indicating that among those high in dispositional benign envy, daily Instagram use predicted self-improvement more strongly. Surprisingly, we also found a negative moderating effect of dispositional malicious envy on the link between daily Instagram use and self-improvement, showing that daily Instagram use could only predict self-improvement among those low in dispositional malicious envy.

8.1. The associations of Instagram use with gossiping and self-improvement

Highlighting the dark side of social networking sites, previous research has shown that Instagram use is negatively associated with different psychological well-being indicators, such as stronger psychological pain, higher physical appearance anxiety, higher body dissatisfaction, and lower self-esteem (e.g., Barac and Maekawa, 2017; Sherlock and Wagstaff, 2019). The positive link between Instagram use and gossiping observed in the present study is consistent with the dark side of the social networking site. As a negative and threat-oriented reaction, gossiping has been shown to be a harmful behavior. In a workplace setting, a prevalence of gossip increases the overall pressure to perform and creates weaker emotional ties and less trusting relationships (Tan et al., 2021). Gossipers are often disliked by others (Turner et al., 2003) and may experience self-criticism to a larger extent, leading to a decrease of self-esteem (Cole and Scrivener, 2013). Therefore, the positive link between Instagram use and gossiping may explain the detrimental effect Instagram use has on psychological well-being. For instance, if Instagram users gossip more, they may engage in self-criticism more frequently, leading to higher body dissatisfaction and

lower self-esteem.

There is a bright side to social networking sites. Instagram is also associated with various positive outcomes, such as higher levels of happiness and lower levels of loneliness (e.g., Pittman and Reich, 2016). The positive link between Instagram use and self-improvement observed in the present study aligns with this. Previous research has shown that tendency to self-improve is associated with life satisfaction and psychological well-being (Bauer et al., 2018), while striving for personal goals is also found to affect subjective well-being longitudinally (e.g., Brunstein, 1993; Sheldon and Elliot, 1999). Hence, self-improvement may serve as one underlying mechanism to explain why Instagram use may benefit psychological well-being.

Interestingly, our results show that, at the between-person level, the average use of Instagram has a stronger effect on the average level of self-improvement (i.e., $b = .69$) across a period of time than the average level of gossiping (i.e., $b = 0.31$). In contrast, at the within-person level, the daily use of Instagram seemingly yields a relatively larger effect on gossiping (i.e., $b = 0.27$) than self-improvement (i.e., $b = 0.13$), though the results do not reach significance ($p = .135$). A possible explanation for this pattern of results is that, compared to the goal of gossiping, which can be easily fulfilled in a short term, the goal of self-improvement is a more difficult one and requires long-term effort. As perceived goal difficulty is associated with task performance (Cheng et al., 2007; Senko and Harackiewicz, 2005), user may feel it is easier to gossip on any given day, while the goal of self-improvement is fulfilled over a period of time, leading to the current pattern of results.

8.2. The moderating role of dispositional malicious envy on Instagram use

Consistent with our expectations, dispositional malicious envy moderates the effect of Instagram use and gossiping. Specifically, among those high in dispositional malicious envy, the positive effect of Instagram use on gossiping is stronger than among those low in dispositional malicious envy. These findings are consistent with the desire to pull others down when experiencing malicious envy (Van de Ven et al., 2009). Previous research found that dispositional malicious envy is positively associated with narcissistic rivalry (Lange et al., 2016; Vrabell et al., 2018) and moral disengagement (Zhao and Zhang, 2022). Therefore, people high in dispositional malicious envy may be motivated to engage in the active devaluation of others and will adopt a means (e.g., gossiping) that may not be morally and socially acceptable. This also explains why malicious envy is generally associated with different maladaptive social tendencies, like schadenfreude (Krizan and Johar, 2012; Lange et al., 2018b) and social undermining (Duffy et al., 2012; Salovey and Rodin, 1984). Furthermore, Crusius and Lange (2021) demonstrated that malicious envy is more strongly characterized by other-focused counterfactuals, in which people experiencing malicious envy may think more about the actions that others could (or could not) have taken that would result in an advantage. As such, after being exposed to many idealized profiles of others on Instagram, people high in dispositional malicious envy may hold more other-focused counterfactuals, which in turn may increase their tendency to gossip.

Unexpectedly, we also observe a negative moderating effect of dispositional malicious envy on the link between Instagram use and self-improvement. Dispositional malicious envy acts to shut down the effect of Instagram use on self-improvement, and this is borne out by our findings that Instagram use has no effect on self-improvement among those high in dispositional malicious envy. On the one hand, malicious envy is associated with a perception of a lack of deservingness and hostility towards advantaged others (Van de Ven et al., 2009, 2012). Thus, people high in dispositional malicious envy may be reluctant to see the advantaged others as a role model that inspires one's tendency to self-improve. On the other hand, Salerno, Laran, and Janiszewski (2018) showed that people high in dispositional malicious envy tend to believe that effort does not determine reward, thereby demotivating one's tendency to perform self-improvement, which is effort oriented.

8.3. The moderating role of dispositional benign envy on Instagram use

Aligned with our hypotheses, dispositional benign envy moderates the effect of Instagram use and self-improvement in that Instagram use has an effect on self-improvement among those high in dispositional benign envy, but not for those low in it. These findings are consistent with previous research that found the experience of benign envy can drive one's attention, intention, and behaviors to obtain a desired outcome for oneself (e.g., Crusius and Lange, 2014; Crusius and Mussweiler, 2012; Schaubroeck and Lam, 2004; Van de Ven et al., 2011).

Perceived goal attainability may be one of the explanations for the moderating effect of dispositional benign envy. Dispositional benign envy has been found to be positively associated with the sense of personal control over situations (Briki, 2018; Van de Ven et al., 2011). As such, dispositional benign envy may drive a person to believe they are capable of attaining the desired goal, and this has been shown to facilitate goal setting and execution (Zimmerman et al., 1992). Therefore, after being exposed to many idealized profiles of others on Instagram, people high in dispositional benign envy may be likely to perceive goal attainability as high and strive to level the difference between themselves and superior others through self-improvement.

Additionally, the perceived deservingness of superior others may be one of the contributing factors for this moderating effect. Previous studies found that dispositional benign envy can elicit a feeling of admiration and perceived deservingness towards superior others (Lange et al., 2018a). Thus, people high in dispositional benign envy may regard other Instagram users as role models, which may further inspire them to self-improve (Alicke and Zell, 2008; Buunk et al., 2007; Van de Ven et al., 2011).

Finally, psychological resilience may play a role in explaining the moderating effect of dispositional benign envy. Previous studies have documented that dispositional benign envy is positively linked to psychological resilience, which refers to an ability to rebound from failure, overcome difficulties and adapt positively to adversity (e.g., Dong et al., 2020; Li and Li, 2022). People who are exposed to many idealized profiles of others on Instagram may feel inferior during the upward comparison and may regard this experience as difficult since it highlights their inadequacy and failure. Therefore, people high in dispositional benign envy may possess a stronger psychological resilience, which helps facilitate self-improvement when their inadequacy and failure are made salient.

8.4. Limitations and future directions

This research is not without limitations. First, although the present findings reveal the moderating effects of dispositional malicious and benign envy on Instagram use, it is unclear what the mechanisms underlying these moderating effects are. Future studies should unpack these moderation effects (Kwan and Chan, 2018; Ng, Cheung, and Lau, 2019) by examining the possible mechanisms mentioned above, such as achievement motives of hope for success vs. fear of failure, self-vs. other-focused counterfactuals, perceived deservingness, and goal attainability. Second, previous research indicates that on social networking sites, upward social comparisons are more prevalent, and this helps explain the links between the use of social networking sites and various downstream consequences (Kross et al., 2013; Lin and Utz, 2015). Yet, the current research does not explicitly test if upward social comparisons can mediate the links of Instagram use with gossiping and self-improvement. Future research should be conducted to offer an explicit test by studying if the content seen on Instagram will elicit upward social comparisons that further drive either gossiping or self-improvement. Third, although Instagram is regarded as the most popular and influential social networking site among young adults nowadays (Edison Research, 2022; Hou and Shiau, 2020; Richter, 2019), the focus on a single social networking sites and the use of a university student sample in the present research limit its

generalizability. Previous research revealed that the impact of social networking sites could vary depending on platform and age group (e.g., Alhabash and Ma, 2017; Sakurai et al., 2021). Thus, future studies should be conducted to examine the generalizability of the current findings by including more diverse platforms and samples.

To conclude, with a daily diary design, this research revealed the associations of daily Instagram use with two sharply different outcomes – a more negative and threat-oriented response of gossiping that aims to pull others down, as well as a more positive and challenge-oriented response of self-improvement that focuses on levelling oneself up. More importantly, we showed that these intra-individual associations were conditional on one’s dispositional malicious and benign envy. These cross-level moderation effects may help reveal a reason why Instagram use can bring both positive and negative outcomes.

Credit author statement

Jacky C. K. Ng: Conceptualization, Methodology, Data curation, Formal analysis, Writing – original draft, Writing – review and editing. Febie S. S. Lin: Conceptualization, Writing – original draft, Writing –

review and editing. Virginia K. Y. Lee: Conceptualization, Project administration, Writing – review and editing.

Compliance with ethical standards

The present research involved human participants. Informed consent was obtained in advance from all participants in this research in written form. The study procedure has been approved by the Departmental Research Subcommittee of the Hong Kong Shue Yan University.

Declaration of competing interest

The authors declare that they have no known competing financial interests or personal relationships that could have appeared to influence the work reported in this paper.

Data availability

Data will be made available on request.

Appendix

Table A1
Baseline Measures

Dispositional Benign and Malicious Envy (Lange and Crusius, 2015)	
1.	If someone has superior qualities, achievements, or possessions, I try to attain them for myself
2.	When I envy others, I focus on how I can become equally successful in the future
3.	If I notice that another person is better than me, I try to improve myself
4.	Envyng others motivates me to accomplish my goals
5.	I strive to reach other people’s superior achievements
6.	Seeing other people’s achievements makes me resent them
7.	I wish that superior people lose their advantage
8.	If other people have something that I want for myself, I wish to take it away from them
9.	I feel ill will toward people I envy
10.	Envious feelings cause me to dislike the other person
Diary Measures	
Daily Instagram Use (Yang, 2016)	
1.	Tag others in your posts or comments
2.	Comment on or reply to others’ posts
3.	Check out others’ profiles without leaving comments
4.	Browse the home page/newsfeed without leaving comments
5.	Post/Upload on your profile without tagging anyone
6.	Post something that is not directed to specific people
Daily Tendency to Gossip (Nevo et al., 1993)	
1.	I talk to friends about other people’s clothes
2.	I talk to friends about other people’s grades and intellectual achievements
3.	I talk to friends about the problems some of our friends have at work
4.	I analyze with my friends the motives and reasons for other people’s behaviors
Daily Tendency to Self-Improve (Breines and Chen, 2012)	
1.	I will do my best to become more like the person I would ideally like to be
2.	I feel no need to do anything to become more like the person I would ideally like to be (R)
3.	I am committed to becoming more like the person I would ideally like to be.
4.	I wish I could go back in time to become more like the person I would ideally like to be
5.	Realistically, it is unlikely that I will do anything to become more like the person I would ideally like to be (R)

Table A2

Outcome	Multilevel Model 1 (H1a and H1b)		Multilevel Model 2 (H2a and H2b)			
			Step 1		Step 2	
	Gossiping	Self-improvement	Gossiping	Self-improvement	Gossiping	Self-improvement
<i>Within-level effect</i>						
Instagram use	<i>b</i> = .27***	<i>b</i> = .13*	<i>b</i> = .27***	<i>b</i> = .18**	-	-
<i>Between-level effect</i>						
Instagram use	<i>b</i> = .31***	<i>b</i> = .69***	<i>b</i> = .04	<i>b</i> = .44*	<i>b</i> = .11	<i>b</i> = .37*
<i>Cross-level moderation effect</i>						
Malicious envy	-	-	-	-	<i>b</i> = .05*	<i>b</i> = -.10**
Benign envy	-	-	-	-	<i>b</i> = -.04	<i>b</i> = .13**

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

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