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# "Distant" Pictures Benefit Emotion Regulation in Emotion Disclosure on WeChat Moments

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# **Abstract**

The present study was conducted to answer a single question: What is the role of picture-posting activities on social networking sites in emotion regulation? Across three studies, we find evidence suggesting that posting "psychologically distant" pictures is related to online negative emotional disclosure and could be a strategy for reducing negative affect by promoting cognitive reappraisal. We discuss important theoretical and practical implications of our study.

**Keywords:** pictures, emotion regulation, psychological distance, WeChat Moments

# Introduction

PHOTO SHARING HAS BECOME a pervasive routine communicative act in everyday life. On Facebook 75 percent of content now is photographs,<sup>2</sup> and more than 70 million average photos were uploaded per day on Instagram in 2015.<sup>3</sup> On WeChat Moments, one of the most popular social networking sites (SNSs) in China, "choosing a picture" is the default first action in the system settings when users begin to post a message, and an average of 1 billion photos are uploaded by users per day.<sup>4</sup> A wealth of research has revealed that avatars and selfies are key means of selfpresentation<sup>5-7</sup>; and there is a link between user's photorelated activities and their personality traits.8-10 However, little is known regarding the psychological function and effect of picture-posting activities beyond self-representation. Compared with words, expressing oneself through pictures is more indirect, but contains rich meaning that can lead to more open explanation and comprehension. In some cases we can observe that users share negative emotion but post a picture that seemed unrelated to the emotional event, for instance, "I failed the exam" alongside a picture of seaside sunset. Why they post irrelevant pictures? What is the certain psychological function of these pictures? In this research, we take a psychological distance perspective to understand the effect of what we call "distant" pictures in negative emotional disclosure on WeChat Moments on emotion regulation.

It has been known expressing negative affect could facilitate emotional recovery; however, the style of expression might impact the effect. In the field of emotion regulation, a wealth of scholars have examined a strategy known as "self-distancing" as a mechanism that may allow individuals to adaptively process negative events without causing further negative affect. The process of "distancing" could be truly perceived<sup>11</sup> or simply be imagined. Furthermore, changing the language describing the emotional stimulus to be more "distant" (e.g., from the first-person perspective to the more distant second-person perspective) has the same effect. In one recent study, participants who wrote about negative images using psychologically "distant" language (e.g., reducing use of first-person singular pronouns and present-tense verbs) were more effective at reducing negative affect. Additionally, linguistic distancing has been found to be an important component of the beneficial impact of expressive writing.

If distancing language can foster adaptive regulation, might distancing pictures also help people regulate negative emotions? In the circumstance of SNSs, it is common to post pictures when disclosing emotions, but sometimes we can see that the content of the pictures are unrelated to either the affect or emotional events they are expressing, which seems to be a kind of mental "distancing." Furthermore, the mental representation of psychological distance, a subjective experience that something is close or far away from the self, here, and now, <sup>17</sup> inheres not only in words but also in pictures. Particularly with the pictures released on SNSs, some are taken by users themselves, while some are downloaded from other Web sites; some are real photographs, while some are emoticons or caricatures; some are selfies, while some show other people or show no people in the pictures; some are honestly reflecting the scenes here and now, while some are not. These contrasts represent psychological distance, either closer or farther away. Thus, it is reasonable to assume that

distancing pictures might be a way to facilitate affective outcomes in online emotional disclosure.

# Overview of the Current Research

The current research focuses on two issues. First, might SNS users post more "distant" pictures when they share negative emotions?

H1: Compared with positive emotional disclosure, individuals would post pictures with greater psychological distance in the physical, social, temporal, and hypothetical domains (i.e., not this place, not themselves, not this time, not reality) in negative emotional disclosure on SNSs.

Second, could "distant" pictures play a positive role in diluting emotional reactions? If so, might improved cognitive reappraisal explain the effects, just as has been revealed in the relationship between linguistic distancing and improved affective outcomes?<sup>15</sup>

# H2: Posting "distant" pictures would reduce users' negative affect, and cognitive reappraisal could mediate this effect.

We conducted three studies to investigate the aforementioned two hypotheses. Study 1 examined H1 and 2 by preliminarily exploring whether the phenomenon of bidirectional associations between psychologically distant pictures and emotion regulation exists on WeChat Moments. In Study 2 and 3, the causal paths of "negative emotion → distancing pictures" (H1) and "distancing pictures  $\rightarrow$  less emotional reactivity" (H2) were examined, respectively. Study 2 asked participants to recall one recent positive event and one recent negative event, then to imagine which kind of pictures they would post if they were to share this event on WeChat Moments. In Study 3, participants' negative affect was inspired by a social exclusion task, and they were then asked to share their feelings on WeChat Moments with a picture with distant or close psychological distance. Their emotions were measured both before and after the activity of posting pictures. We investigated whether the "distant" pictures reduced negative affect.

# Study 1

# Method

Participant. A sample of 35 college students (9 males, 26 females; mean age =  $22.15\pm2.68$  years) were recruited to participate in this study and received \$10 as payment. The participants had been users of WeChat Moments for  $3.83\pm1.16$  years and had  $315.14\pm251.13$  friends.

Procedure and measures. The participants were seated in an independent, quiet laboratory and asked to open their We-Chat Moments and review, one by one, the original messages with pictures they had posted in the last 4 months. Ads, notices, and other messages that had no emotion involved were excluded. They were instructed to read each message, recall and briefly describe in a sentence what had occurred at that time, then rate the emotional valence and intensity of the trigger events. Next, they were asked to recall their emotion after they posted the message and to rate the emotional valence and intensity again. Both emotional ratings were measured by one item with a 6-point scale ranging from -3 (totally negative) to 3

(totally positive). Following providing the number of comments and likes for each message and their demographic information, participants were asked whether they were willing to add the research assistant as a friend and allow her to code those messages. All of the participants agreed to the request. For privacy concerns, only one research assistant examined whether the content of each picture reflected the original emotional event they described (i.e., whether the picture involved event-related people, time, and place); if it did, it was coded as 1 (close); if it did not, it was coded as —1 (distant). If there was more than one picture posted with one message, only the first one was coded. Finally, participants voluntarily unfriended the research assistant and were debriefed.

# Results

A total of 391 messages that met the requirement (posted in the last 4 months, original, involving emotion, and with picture attached) were collected. Among them, 79.5 percent (311) of the trigger events were positive (scores more than 0), whereas the other 20.5 percent (80) were negative (scores less than 0). People are more inclined to publish positive, rather than negative, information on social media, which is consistent with results of previous research. <sup>18,19</sup> Among the positive events, there were only 17 (15.1 percent) accompanied by "distant" pictures, whereas "distant" pictures accompanied up to 196 (50.1 percent) among the negative events, which was significantly more than the former ( $\chi^2 = 101.34$ , p < 0.001). Furthermore, the effect of the degree of psychological distance of pictures on emotion change was explored. After controlling for gender, age, number of friends, and number of comments and likes, the psychological distance of pictures negatively predicted the degree of emotion change of negative events (B = -0.53, SE = 0.16, p = 0.002), but did not predict that of positive events (B = -0.15, SE = 0.11, p = 0.178). The results suggested that posting "distant" pictures on SNSs could help to buffer negative emotions.

# Study 2

# Method

Participant. A sample of 201 college students (102 males, 99 females; mean age =  $21.72\pm2.07$  years) participated in this study in exchange for course credit. The participants had been users of WeChat Moments for  $3.18\pm1.23$  years and had  $169.56\pm184.85$  friends. Of the participants, 96.5 percent checked WeChat Moments daily, and 71.6 percent posted a message with pictures at least once a week.

Procedure. The participants completed a series of questionnaires in the following order. At the beginning, they were asked to provide their use history, use frequency, and number of friends on WeChat Moments. Then, they were asked to recall a recent life event that had induced emotions, either positive or negative. They wrote down a sentence to describe the event and rated its valence and intensity. Next, participants were asked to imagine what kind of pictures they would choose to post if they were going to share this event on WeChat Moments and then rate the psychological distance of the picture they imagined. Finally, participants provided their demographic information.

Measures. Emotional valence and intensity of event was measured by one item with a 7-point scale ranging from 1

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(totally negative) to 7 (totally positive). Psychological distance of imagined picture was measured by four items corresponding to one of the four dimensions of psychological distance: temporal, spatial, social, and hypothetical. Specifically, participants rated distance on a 6-point scale ranging from 1 (The picture and the event are at the same time/The picture and the event are in the same place/The person in picture is me/The picture is real) to 6 (The picture and the event are not at the same time/The picture and the event are not in the same place/The person in picture is not me/The picture is fictional). The higher the score, the greater the psychological distance of the pictures.

# Results

Table 1 provides mean and standard deviations of main variables. The rated scores of four psychological distance dimensions were positively interrelated (r's  $\geq 0.46$ , p's < 0.001;  $\alpha$ =0.84), which supported the idea that distance dimensions are automatically associated. <sup>20</sup> There are negative correlations between the rated emotional valence and intensity of the nominated event and all four dimensions of psychological distance of the imagined picture (r's  $\leq$  -0.24, p's < 0.001), which means the more negative the events, the greater the psychological distance of the pictures they would post when sharing the events on WeChat Moments.

A linear regression was conducted to explore the effect of emotional valence and intensity of events on the four dimensions of psychological distance of pictures. As seen in Table 2, the results indicated that after controlling for gender, age, number of friends, and years of using WeChat Moments, the emotional valence and intensity of events were negatively related to the temporal (B = -0.28, p < 0.001), spatial (B = -0.21, p < 0.001)p = 0.002), social (B = -0.21, p = 0.003), and hypothetical (B=-0.21, p=0.002) distance of the imagined pictures. The combined results indicated that the more negative the life events shared on WeChat Moments, the greater the psychological distance of the pictures participants would post.

# Study 3 Method

Participants. A sample of 112 college students (42 males, 70 females; mean age =  $22.31 \pm 2.31$  years) were recruited to participate in this study and received \{\forall}20 as payment. They had been users of WeChat Moments for  $3.68 \pm 1.62$  years.

Procedure and measures. All participants provided informed consent. To reduce suspicion about the purpose of the study, participants were told they would be participating in two separate studies of online group communication and user experience of mobile phones, respectively. The first study actually represented the manipulation of social exclusion—a common but negative experience—and the second one represented the manipulation of the psychological distance of pictures. We modified previous manipulation<sup>21,22</sup> in which participants were told that they would be discussing one randomly selected topic with two fellow students (participant A and participant B) in an online chat room. However, unbeknownst to participants, A and B were actually confederates, and the main parts of the online communication between the two confederates were scripted ahead of time. As the discussion progressed, the confederates continued to direct their questions and responses solely toward each other and never acknowledged any attempt by the participant to enter the conversation. The online discussion for each condition took  $\sim 10$  minutes. After being told their chat time was up, participants were asked to report their feeling of sadness (the negative emotion that was most often triggered by social exclusion) at that moment on a 10-point scale  $(1 = not \ at \ all, \ 10 = very \ much)$ . After the pretest of emotion, they completed the manipulate check item that indicated on an 8-point scale (1 = not at all, 8 = very much) how rejected they felt during chatting.

Next, participants were randomly assigned to the distant picture, close picture, or the control condition. Participants in the distant and close conditions were given the following instructions: "Send a picture on your WeChat Moments to share what occurred and how you felt in the chatting task." Participants in the distant condition were also told that "The picture must be a picture of the scenery outside the window." Participants in the close condition were also told that "The picture must be a screenshot of your chat with participants A & B." The control condition was instructed to type a 20word text of rules for the laboratory using the memo feature on their mobile phone. Following this task, all the participants were asked to indicate again how sad they felt at this

Table 1. Descriptive Statistics and Correlations Among the Key Variables in Study 2

|  | 1      | 2      | 3       | 4      | 5       | 6      | 7      | 8      | 9    |
|--|--------|--------|---------|--------|---------|--------|--------|--------|------|
| 1. Gender                                    | 1      |        |         |        |         |        |        |        |      |
| 2. Age                                       | 0.05   | 1      |         |        |         |        |        |        |      |
| 3. Number of friends                         | 0.19*  | 0.21** | 1       |        |         |        |        |        |      |
| 4. Years using Moments                       | 0.16*  | 0.17*  | 0.42**  | 1      |         |        |        |        |      |
| 5. Emotional valence and intensity of events | 0.13   | 0.03   | 0.27**  | 0.23** | 1       |        |        |        |      |
| 6. Temporal distance of pictures             | 0.19** | -0.09  | -0.14   | -0.05  | -0.33** | 1      |        |        |      |
| 7. Spatial distance of pictures              | -0.11  | 0.01   | -0.22** | -0.17* | -0.27** | 0.59** | 1      |        |      |
| 8. Social distance of pictures               | -0.06  | 0.02   | -0.15*  | -0.12  | -0.24** | 0.46** | 0.70** | ' 1    |      |
| 9. Hypothetical distance of pictures         | -0.10  | -0.03  | -0.09   | -0.09  | -0.24** | 0.58** | 0.56** | 6.50** | ' 1  |
| Mean   | 0.51   | 21.72  | 0.00    | 3.18   | 4.74    | 3.91   | 4.08   | 4.00   | 3.28 |
| SD   | 0.50   | 2.07   | 0.99    | 1.23   | 2.19    | 2.03   | 2.08   | 2.19   | 2.03 |

Gender was dummy-coded as 0 for female and 1 for male.

p < 0.05, \*\*p < 0.01.

|                                   | Temporal distance |      | Spatial distance |       |       | Social distance |       |      | Hypothetical distance |       |      |       |
|-----------------------------------|-------------------|------|------------------|-------|-------|-----------------|-------|------|-----------------------|-------|------|-------|
| Factor and statistics             | В                 | SE   | p                | В     | SE    | p               | В     | SE   | p                     | В     | SE   | p     |
| Gender                            | -0.59             | 0.28 | 0.03             | -0.24 | 0.29  | 0.41            | -0.07 | 0.31 | 0.82                  | -0.29 | 0.29 | 0.31  |
| Age                               | -0.06             | 0.07 | 0.33             | 0.07  | 0.07  | 0.30            | 0.06  | 0.08 | 0.44                  | -0.02 | 0.07 | 0.78  |
| Number of friends                 | 0.01              | 0.12 | 0.94             | -0.13 | 0.13  | 0.31            | -0.06 | 0.14 | 0.69                  | 0.02  | 0.13 | 0.86  |
| Years of using Moments            | -0.04             | 0.16 | 0.79             | -0.30 | 0.17  | 0.08            | -0.17 | 0.18 | 0.36                  | -0.03 | 0.17 | 0.88  |
| General degree of self-disclosure | 0.01              | 0.02 | 0.54             | 0.00  | 0.02  | 0.85            | -0.02 | 0.02 | 0.49                  | -0.00 | 0.02 | 0.91  |
| Emotional intensity of events     | -0.28             | 0.07 | < 0.001          | -0.21 | -0.07 | 0.002           | -0.21 | 0.07 | 0.003                 | -0.21 | 0.07 | 0.002 |
| Changed $R^2$                     | 0.09              |      |                  | 0.08  |       |                 | 0.04  |      |                       | 0.03  |      |       |

Table 2. Regression of Emotional Valence and Intensity of Events on the Four Dimensions of Psychological Distance of Pictures

time on a 10-point scale ( $1=not\ at\ all$ ,  $10=very\ much$ ), and several filler items were included to bolster the credibility of the cover story. Finally, participants completed a 6-item measure of cognitive reappraisal<sup>23</sup> ( $\alpha$ =0.93) to report whether they had experienced certain ideas (e.g., I changed my mind to feel more positive) when they were editing the message (in the two picture conditions) or typing the words (in the control condition); responses were indicated using a 7-point scale ( $1=totally\ disagree$ ,  $7=totally\ agree$ ). All participants were then asked to provide their thoughts on the study's purpose and fully debriefed. There were no participants who correctly guessed the research purpose.

#### Results

Manipulation checks. As expected, participants reported feeling rejected (M=6.31, SD=1.40), which was greater than the median point 4.50 (t=17.46, p<0.001). Furthermore, there were no differences among the three conditions (t's<0.61, p's>0.55).

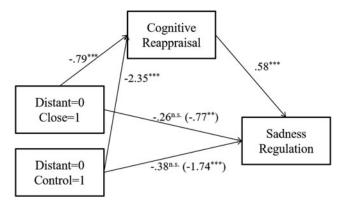
Effects of emotion regulation. Table 3 provides mean and standard deviations of main variables. In the pretest of sadness, there were no differences among the three conditions [F(2)=0.18, p=0.84]. To assess the pretest–posttest change, ANCOVA with pretest sadness as a covariate and posttest sadness as a dependent variable was conducted. The results revealed statistically significant group differences in posttest sadness [F(2)=49.36, p<0.001,  $\eta_p^2=0.478$ ]. As expected,

Table 3. Descriptive Statistics of the Key Variables in Study 3

|                              | - u                  | Saa     | ~        |                         |  |
|------------------------------|----------------------|---------|----------|-------------------------|--|
| Feeling of<br>being rejected |                      | pretest | posttest | Cognitive<br>reappraisa |  |
| Distant                      | condition $(n=39)$   | )       |          |                         |  |
| M                            | 6.41                 | 4.59    | 2.15     | 5.23                    |  |
| SD                           | 1.23                 | 1.14    | 0.87     | 0.88                    |  |
| Close o                      | condition $(n=37)$   |         |          |                         |  |
| M                            | 6.22                 | 4.73    | 2.73     | 4.44                    |  |
| SD                           | 1.57                 | 1.83    | 1.22     | 0.71                    |  |
| Control                      | l condition $(n=36)$ | 5)      |          |                         |  |
| M                            | 6.31                 | 4.36    | 3.33     | 2.88                    |  |
| SD                           | 1.43                 | 1.40    | 1.22     | 0.61                    |  |

after controlling for the pretest sadness, the posttest sadness of the distant condition (M=2.15, SD=0.87) was significantly lower than that of the close condition [M=2.73, SD=1.22; t(74)=2.38, p=0.020; d=0.55] and the control condition [M=3.33, SD=1.22; t(73)=4.84, p<0.001; d=1.11]; there was also emotion regulation effect in close condition compared with control condition [t(71)=2.11, t(71)=0.038; t(71)=0.49].

Mediation analysis. A mediation analysis was conducted to test whether cognitive reappraisal mediated the relation between condition and the emotion regulation effect. Following the recommended processes for mediation with a multicategorical independent variable,<sup>24</sup> we conducted the mediation analyses using indicator coding. Compared with the distant condition, the close condition (B=-0.79,p < 0.001; CI = -1.16 to -0.43), and control condition (B=-2.35, p<0.001; CI=-2.69 to -1.99) were associated with a lower degree of cognitive reappraisal. Furthermore, higher reappraisal was positively associated with the effect of sadness regulation (B = 0.58, p < 0.001; CI = 0.36–0.80). Cognitive reappraisal mediated the effect of conditions on sadness regulation, and the conditional indirect effect of cognitive reappraisal reached significance for both the close (indirect effect = -0.51, CI = -0.87 to -0.27; 5,000 bootstrap iterations) and control condition (indirect effect=-1.36, CI = -1.94 to -0.81; 5,000 bootstrap iterations), thus confirming that cognitive reappraisal mediated the relationship between condition (distant vs. close and distant vs. control) and sadness regulation after social exclusion (Fig. 1).



**FIG. 1.** Results of mediation analyses testing indirect effects of experimental condition on sadness regulation through cognitive reappraisal. \*\*p < 0.01, \*\*\*p < 0.001.

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#### **Discussion**

In the research presented here, we, for the first time, explored the role of pictures on online emotion regulation through the theoretical lenses of psychological distance. Across three studies, we found bidirectional relations between distancing pictures and emotion regulation. On the one side, participants spontaneously chose distant pictures to share negative affect (Study 1 and 2). On the other side, participants reported a reduction of negative affect after posting distant pictures (Study 1 and 3). Furthermore, this causal effect of distancing pictures on emotion regulation could be explained by the increased cognitive reappraisal of the negative trigger events (Study 3).

These results provide a new insight into the idea that distancing oneself from aversive stimuli reduces their negative impact<sup>25</sup> by extending the effect from perceived distance, imagined distance, and linguistic distance to distance represented by pictures. Since people in the era of SNSs are so used to sharing life stories to others, and their main expressive methods are words and pictures, it is reasonable that they would spontaneously process emotion regulation when engaging in emotion disclosure. Previous studies have captured this point in language use on online discussion. For instance, after the September 11th attacks, bloggers' language became more psychologically distant<sup>26</sup>; farther distance (temporal and spatial) from a national tragedy reduced the use of affective words in Twitter posts.<sup>27</sup> These results suggest that people might attempt to regulate negative affects through distancing their language. In the present research, a similar phenomenon was found, but the process of psychological distancing was shown in pictures. This finding suggests that not only distant language but also distant pictures could play a role in emotion regulation. Sharing distant pictures could also change one's mental representation of the distance between the self and an emotionally charged stimulus, thereby changing one's emotional response to it.

These results extend the psychological meaning of picture-related activities on SNSs from the context of self-representation to emotion regulation. Previous research has revealed that picture-related activities (like selfies and profile pictures) play an important role in self-representation and impression formation. The present study shed light on the psychological function of initiative picture-posting behavior on SNSs by uncovering its role in emotion regulation. It suggests that distant pictures enable individuals to reinterpret and reappraise one's current situation and emotions, which could help to regulate negative affect. With this finding, our study has important practical implications because it provides a simple way to buffer distresses while self-disclosing on SNSs, that is, to release a distant picture.

Several limitations of this study should be noted. First, the participants were mainly female university students, with an average age of  $\sim 22$  years, which is younger than the average age of WeChat users (26 years). Since there might be distinct preference for using pictures in users of different ages, future research could replicate the effect of distant pictures on emotion regulation in older samples. Second, there was only one research assistant who rated the WeChat Moment massages in Study 1, which is not sufficient to assess data reliably and establish interrater reliability. More than one rater is

needed in the future. Third, a wealth of scholars suggests that relationship maintenance is the main motivation for using SNSs, <sup>29,30</sup> so it is possible that users post distant pictures to satisfy other needs, such as impression management. Emotional disclosure, especially negative emotional disclosure, is a potentially self-threatening behavior. It is considered inappropriate to express negative information publicly<sup>31</sup>; if one person shows his or her negative emotions frequently, (s) he would likely be ascribed as having weaker self-control and emotion management ability,<sup>32</sup> which could damage selfimage. At this point, might posting a distant picture be a strategy to indirectly express negative affect and achieve impression control simultaneously? Future research would benefit from exploring the other psychological functions (including impression management, social support seeking, etc.) of distant pictures on SNSs. Finally, the present study focused on the picture-related activities on SNSs, but in more cases, pictures are posted along with words. The more complicated phenomenon (e.g., a linguistic close sentence along with a distant picture and vice versa) has not received attention in the current research. Future study might explore how pictures and words coordinate and complement each other within one message.

# **Author Disclosure Statement**

The authors declared that they had no conflicts of interest with respect to their authorship or the publication of this article.

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