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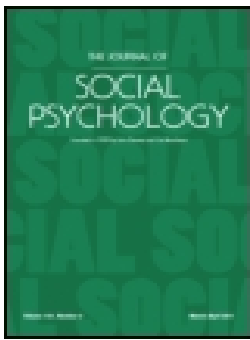
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## “Transformation Tuesday”: Temporal context and post valence influence the provision of social support on social media

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### ABSTRACT

Social network sites (SNSs) such as Facebook have become integral in the development and maintenance of interpersonal relationships. Users of SNSs seek social support and validation, often using posts that illustrate how they have changed over time. The purpose of the present research is to examine how the valence and temporal context of an SNS post affect the likelihood of other users providing social support. Participants viewed hypothetical SNS posts and reported their intentions to provide social support to the users. Results revealed that participants were more likely to provide social support for posts that were positive and included temporal context (i.e., depicted improvement over time; Study 1). Furthermore, this research suggests that visual representations of change over time are needed to elicit social support (Study 2). Results are discussed in terms of their practical implications for SNS users and theoretical implications for the literature on social support and social media.

### KEYWORDS

Facebook; social media; social networking; social support; temporal context

Social network sites (SNSs) such as Facebook have become an important tool for relationship development and maintenance. Indeed, over 1 billion people around the world use Facebook every day (Facebook, 2016) for purposes such as maintaining offline relationships (Ellison, Steinfield, & Lampe, 2007), expanding their social networks (Manago, Taylor, & Greenfield, 2012), and passively browsing others' profiles (Pempek, Yermolayeva, & Calvert, 2009). Much of Facebook activity consists of actively posting content for other users to read and respond (Pempek et al., 2009). Sometimes this content evokes positive responses from other social media users; in other circumstances, it does not elicit support. Social support on SNSs is important because it is associated with positive effects above and beyond those of offline social support, such as increased subjective well-being, reduced stress, and improved physical health (Kim & Lee, 2011; Nabi, Prestin, & So, 2013). The purpose of the present set of studies is to investigate the conditions under which attempts at seeking social support on SNSs are effective versus ineffective.

One common strategy among Facebook users is to give temporal context (i.e., information about the user's improvement or decline) in their posts. For example, users might post a picture of themselves looking healthy and fit alongside a prior picture when they were less healthy and fit. Such posts are often accompanied by the hashtag “#TransformationTuesday”, which focuses on depicting change over time (Moreau, 2017), usually in the context of fitness (Adams, 2016). Typically, users create “transformation” posts intending to have their progress validated by people in their social networks (Moreau, 2017). Although such posts are common, little research has examined whether they serve their intended purpose. In other words, the extant literature has not yet determined whether temporal context information affects social support afforded to the user, nor whether the effects of temporal context depend on the valence or tone of the post (i.e., whether the

user describes a positive or negative change). The current research examined the effects of post valence and temporal context on participants' intentions to provide social support on social media, as well as the boundary conditions around these effects.

### Functional purposes of social media use

According to Nadkarni and Hofmann (2012), social media use serves two primary needs: the need for positive self-presentation and the need to belong. The drive to fulfill these needs influences people's interactions with others and the social feedback they receive. First, people use their SNS profiles to present a positive version of themselves. Self-presenting on SNSs typically makes users feel positively about themselves, but has negative effects on acquaintances who view their profiles (e.g., low self-esteem, decreased life satisfaction, envy, depression symptoms; Chou & Edge, 2012; Steers, Wickham, & Acitelli, 2014; Tandoc, Ferrucci, & Duffy, 2015; Vogel, Rose, Roberts, & Eckles, 2014; see Vogel & Rose, 2016, for a review). Therefore, although engaging in self-presentation on Facebook can lead to positive self-perceptions (Gonzales & Hancock, 2011), it may have negative effects on interpersonal interactions (e.g., not receiving social support). Moreover, users recognize that other users do not necessarily portray themselves accurately on social media and report disapproving of deceptively positive self-presentation (Manago, Graham, Greenfield, & Salimkhan, 2008).

Second, belongingness is an important purpose of social media use. SNSs allow users to display their connections with other people through public interactions and social feedback (Manago et al., 2012), the latter of which is an important indicator of belongingness (Leary, Tambor, Terdal, & Downs, 1995). SNSs allow for two primary forms of social feedback that may promote belongingness needs: comments and paralinguistic digital affordances (social media cues that convey messages without explicitly using language, such as clicking a "like" button; Hayes, Carr, & Wohn, 2016). Social media users generally perceive both comments and paralinguistic digital affordances as indicators of social support on social media (Wohn, Carr, & Hayes, 2016), which has been shown to be associated with physical health and psychological well-being (Kim & Lee, 2011; Nabi et al., 2013).

### Social support on social media

Social media users solicit social support in a variety of ways, framed both positively and negatively. First, positive requests for support often involve seeking validation for one's accomplishments (Blight et al., 2015). Much of the content on SNSs is positive in nature and fulfills the need for positive self-presentation (Qiu, Lin, Leung, & Tov, 2012). Second, SNSs are sometimes used to gain social support and sympathy through the disclosure of negative emotions or information (Blight et al., 2015; Forest & Wood, 2012; High, Oeldorf-Hirsch, & Bellur, 2014). Research directly comparing positive and negative posts has found that positive posts tend to elicit more support than negative posts, but only marginally (Forest & Wood, 2012; Park et al., 2016). In other words, both positive and negative posts may be effective in eliciting social support.

The effect of post valence on social support depends on a variety of factors. Positive posts may be more likely to elicit support from others because most posts on social media are positive, creating a social norm that discourages excessive expression of negative emotions (High et al., 2014; Qiu et al., 2012). Because positive posts are less jarring, providing comments and paralinguistic digital affordances may feel more habitual and normative to other users. Indeed, positive self-disclosure on SNSs typically prompts positive responses (Hollenbaugh & Ferris, 2015). Therefore, a post intended to elicit validation for one's accomplishments may be successful in doing so. Alternatively, validation-seeking posts may be perceived as inauthentic and off-putting, as SNS users typically disapprove of positive self-presentation (Manago et al., 2008; Rosenthal-Stott, Dicks, & Fielding, 2015). Furthermore, seeing others' positive self-presentation often leads to negative self-views and may be aversive (Vogel & Rose, 2016). Therefore, if a post simply conveys a user's talents and accomplishments, other users may be hesitant to provide validation.

Similarly, negative posts may or may not elicit social support. High and colleagues (2014) found that participants were more likely to show support for an individual who posted a small amount of emotional content (i.e., a status update conveying negative affect) than a large amount of emotional content (i.e., a negative status update, a changed relationship status, and a negative profile photo). This may be due to social norms on social media that discourage excessive emotional expression (High et al., 2014). Social media content that is perceived as excessively emotional may make others uncomfortable and therefore less likely to encourage the behavior by providing social support. However, negative posts may also be taken as a sign of honest self-disclosure (Hollenbaugh & Ferris, 2015) and openness to portraying oneself imperfectly on social media. Overall, posts that are perceived as both honest and positive are likely to prompt positive responses from others (Hollenbaugh & Ferris, 2015), and honest self-disclosure on SNSs leads to greater perceived social support (Kim & Lee, 2011). Users can disclose information about themselves on SNSs using both visual and textual cues.

### Contextual cues on social media

Research has shown that contextual cues on social media influence how users' posts are perceived. Visual cues (i.e., pictures) and textual cues (e.g., status updates, photo captions, self-descriptions) influence perceptions of the Facebook user and their posts. Although impression formation on SNSs is primarily done using visual cues (Eftekhari, Fullwood, & Morris), textual cues are used to provide context for unexpected visual cues such as negatively valenced photos (Van Der Heide, D'Angelo, & Schumaker, 2012). We suggest that information about the user's change over time may serve as a contextual cue that influences how a post is perceived and, subsequently, the extent to which other users provide social support for it. For example, social media posts concerning one's accomplishments may be perceived more positively when they include context (e.g., information about how hard the individual worked to achieve positive results). When SNS users post about their improvement over time, they acknowledge their imperfection and may come across as more relatable and genuine. To our knowledge, the effects of temporal context in SNS posts (i.e., "transformation" posts) have not yet been empirically tested.

### Current research

Seeking social support on social media is extremely common, yet there has been limited research examining the nuances of how different factors (e.g., post valence, temporal context) affect whether a user receives social support. In the present research, participants viewed a series of Facebook posts purportedly made by other college students and indicated their intentions to provide social support in the form of comments and paralinguistic digital affordances (e.g., virtual "Likes"). Importantly, these posts varied in valence (i.e., positive or negative) and temporal context (i.e., depiction of change over time).

Based on the extant literature on social media and social support, we formed the following hypotheses. First, we expected a main effect of post valence such that positive posts would gain more social support than negative posts, due to positive content being normative. Second, we predicted a main effect of temporal context such that posts with context would result in more social support than those without context. Finally, we hypothesized an interaction between post valence and temporal context such that positive posts that included temporal context would garner more social support than any other type of post. Although positive posts are often viewed as inauthentic (Manago et al., 2008; Rosenthal-Stott et al., 2015), positive posts with temporal context include an element of honest self-disclosure by acknowledging the user's imperfections. This honest self-disclosure is likely to result in social support (Hollenbaugh & Ferris, 2015). Although negative posts with temporal context could also be viewed as honest self-disclosure, they violate the norm of posting positive content on Facebook (Qiu et al., 2012). Therefore, we expected that positive posts with temporal context would elicit the most support.

## Study 1

### Overview

In Study 1, college student participants viewed three Facebook posts that each included a text caption and one or two photos.<sup>1</sup> All posts were related to health and fitness because most “transformation” posts consist of a set of photos depicting change over time in the context of fitness and/or weight loss (Adams, 2016), and this domain is well suited to visually depicting change over time. Importantly, participants viewed either positive posts depicting someone healthy or negative posts depicting someone unhealthy, based on random assignment. Orthogonal to this, participants either received contextual information about temporal change in health status or did not receive any contextual information. Moreover, due to the relative scarcity of literature on temporal contextual cues, we included two temporal context conditions in addition to the no-context control condition. In the recent past condition, the Facebook user reported that the first photo was taken 6 months ago; in the distant past condition, the first photo was purportedly taken 3 years ago. The purpose of this exploratory variable was to examine the impact of different dimensions of temporal content. After looking at each post, participants reported their intentions to provide social support by indicating whether they would comment on the post and/or virtually “Like” the post.

### Method

#### Participants and design

Participants were 289 undergraduates (54% female) from a large, Midwestern university in the United States. The racial make-up of the sample was 66.1% White, 9.7% Black, 4.8% Asian, 10% multiple races, 7.3% other or unknown race, and 2.1% unreported. A research assistant randomly assigned each participant to one cell in a 2 (post valence: positive or negative) X 3 (temporal context: distant past, recent past, or no context) between-subjects design. A power analysis using G\*Power indicated that detecting a medium effect at 85% power would require 251 participants. We targeted this sample size, then continued to collect data for the remainder of the week after reaching it.

#### Procedure

Participants came to the lab in groups of 1–4 for a study on perceptions of others’ Facebook activity. A research assistant seated participants at individual computers. After obtaining informed consent, the research assistant informed participants that they would be answering questions about their own personality, viewing Facebook posts from three other Facebook users, and answering questions about the users and their posts. As part of a larger study, participants completed some initial questionnaires on the computer using MediaLab software. Next, they viewed three screenshots of Facebook posts purportedly created by other students at their university. Participants had four minutes to view each post on the computer and answer a series of questions about it (described below) on paper. Lastly, participants completed some final questionnaires on the computer.

#### Materials

The Facebook posts differed by condition. All photos were publicly available on Pinterest.com as before-and-after weight loss photo sets. We chose photo sets of young adults that provided the person’s body mass index (BMI) for both the “before” and “after” pictures. The average “before picture” BMI was 37.7 (37.1 for women, 38.3 for men), which is considered obese. The average “after picture” BMI was 24.7 (24.5 for women, 25.0 for men), which is at the upper end of the “healthy” range (Centers for Disease Control and Prevention, 2015). The average BMI change was 13, which represents substantial weight loss. Independent-samples *t*-tests demonstrated that male and female targets did not significantly differ in starting BMI, ending BMI, or BMI change ( $p$ 's > .54).

Participants in the conditions with no temporal context saw either the “before” photos (negative condition) or “after” photos (positive condition) only. For participants in the conditions with temporal context, we adjusted the order of the photos to depict positive change over time (positive conditions) or negative change over time (negative conditions). Text captions provided context for the pictures and enhanced the valence manipulation. For example, captions in the “negative” conditions focused on users’ dissatisfaction with their present health and fitness. Captions in the temporal context conditions (distant past or recent past) also included information about the time interval between the first and second photos. In the distant past conditions, the target person mentioned that the photos were taken 3 years apart. In the recent past conditions, the photos were purportedly taken 6 months apart. Participants in the no-context conditions saw only one photo. Table 1 presents sample photo captions.<sup>2</sup>

### Measures

The present study used the following measures.

**Social support.** Participants completed a measure after viewing each Facebook post to assess intentions to provide social support to the user. Specifically, participants answered the following: “If you logged into Facebook and saw this post from an acquaintance, would you press the “like” button?” (yes or no); “If you logged into Facebook and saw this post from an acquaintance, how likely would you be to press the ‘like’ button?” (1 = *not at all likely*, 5 = *very likely*); “If you logged into Facebook and saw this post from an acquaintance, would you comment on it?” (yes or no); and “If you logged into Facebook and saw this post from an acquaintance, how likely would you be to comment on it?” (1 = *not at all likely*, 5 = *very likely*)<sup>2</sup>. We recoded dichotomous items such that higher numbers indicated greater likelihood of providing social support (i.e., “liking” or commenting on the post). We z-scored, then combined dichotomous and Likert-type items to form a social support index for each of the three Facebook posts. Reliability was good for post 1 ( $\alpha = .70$ ), post 2 ( $\alpha = .79$ ), and post 3 ( $\alpha = .74$ ). We calculated a composite social support score that included all three targets by combining mean social support scores for each target ( $\alpha = .85$ ).

**Manipulation checks.** Participants answered two manipulation check questions to ensure that they read and understood the information in the post. The first item read, “In the photo set you just viewed, how much time passed between the first picture and the second picture?” (*6 months, 3 years, or I only saw one photo*). The second item read, “In the photo set you just viewed, which statement best describes how the person changed?” (*The person looks better [i.e., more healthy] in the second [more recent] photo than the first [older] photo, The person looks worse [i.e., less healthy] in the second [more recent] photo than the first [older] photo, I only saw one photo*). Participants answered both questions three times (once for each post).

**Table 1.** Photo captions in Study 1.

Condition	Example Caption
Positive, Recent Past	“It’s crazy to think about how different I look and feel since I began my weight loss journey 6 months ago. The picture on the left was taken 6 months ago, and the picture on the right was taken yesterday. For the first time in years, I actually feel confident in myself.” (Target 1)
Positive, Distant Past	“Lol I’m so embarrassed looking back at the first picture of myself from 3 years ago. But I’m proud of how hard I’ve worked to get the body I have today.” (Target 3)
Positive, No Context	“Had a great workout today! Feeling strong 😊” (Target 2)
Negative, Recent Past	“Although this is embarrassing to post, I felt it was important to share. I wasn’t careful about my diet and exercise once I started college, and I’m really disappointed in how much I’ve changed in 6 months. Remember that eating healthy and being active is important!” (Target 2)
Negative, Distant Past	“Lol I look so miserable in the second picture. I wish I could bring myself to enjoy sports so that I could lose weight and be healthier, like I was 3 years ago. All I can do is try!” (Target 3)
Negative, No Context	“After seeing this picture of myself from yesterday, I realize how uncomfortable I am with my weight. I know I should make changes, but I don’t know where to start.” (Target 1)

## Results and discussion

### Manipulation checks

We scored manipulation check questions for correctness. Two hundred thirteen participants (73.7%) answered all six manipulation check questions correctly. Two hundred fifty-eight participants (89.3%) answered at least three of the six questions correctly. Excluding participants from analyses based on manipulation check scores did not change the pattern of results described below. As such, we retained all participants in order to maximize statistical power.

### Social support analyses

We submitted the aggregated social support index to a 2 (post valence: positive or negative) X 3 (temporal context: no context, recent past, or distant past) between-subjects ANOVA.<sup>1</sup> There was a large main effect of post valence, such that positive posts ( $M = .22$ ,  $SD = .66$ ) elicited more social support than negative posts ( $M = -.22$ ,  $SD = .59$ ;  $F(1, 283) = 35.17$ ,  $p < .001$ , partial  $\eta^2 = .11$ ). There was a smaller, but significant main effect of temporal context,  $F(2, 283) = 6.64$ ,  $p = .002$ , partial  $\eta^2 = .05$ . Post-hoc Tukey tests revealed that participants were more likely to provide social support in the conditions with temporal context (recent past  $M = .09$ ,  $SD = .68$ ; distant past  $M = .12$ ,  $SD = .73$ ,  $p$ 's  $< .003$ ,  $d$ 's  $> .45$ ) than the conditions with no temporal context ( $M = -.19$ ,  $SD = .53$ ). Social support intentions did not differ based on whether the past context was recent or distant ( $p = .93$ ). Finally, there was an interaction between post valence and temporal context,  $F(2, 283) = 9.59$ ,  $p < .001$ , partial  $\eta^2 = .06$ . When the post was negative, temporal context did not significantly influence intentions to provide social support. When the post was positive, temporal context resulted in greater intentions to provide social support. See Figure 1. All results were consistent with our hypotheses, and the medium-to-large effect sizes suggest notable differences in social support intentions across the different types of Facebook posts. See Table 2 for descriptive statistics for each condition.

## Studies 2a and 2b

### Overview

Study 1 provided initial evidence that the valence and temporal context of a Facebook post independently influence other Facebook users' intentions to provide social support. Moreover, participants were likely to provide support when a post demonstrated the user's positive change over time. This

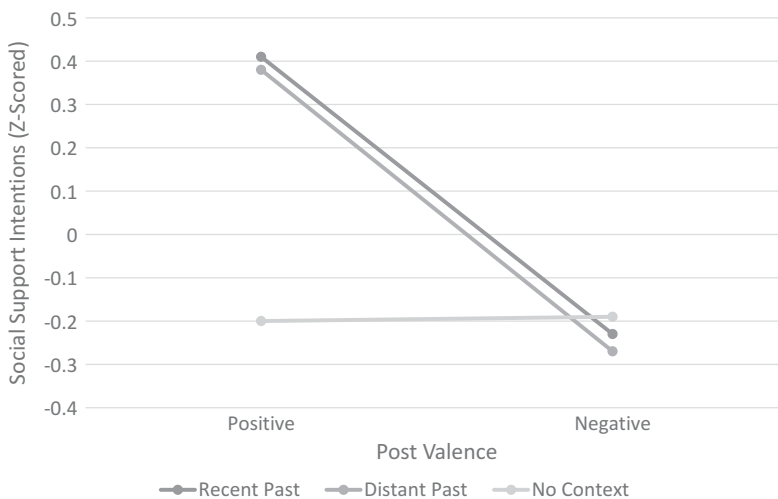


Figure 1. Social support intentions in Study 1.



**Table 2.** Descriptive statistics from Study 1 by condition.

	Positive			Negative		
	M (S)	95% CI	n	M (S)	95% CI	n
Recent Past	.41 (.64)	.23, .59	49	-.23 (.57)	-.39, -.07	48
Distant Past	.39 (.67)	.20, .56	55	-.27 (.64)	-.48, -.06	36
No Context	-.20 (.47)	-.34, -.06	44	-.19 (.58)	.34, -.09	57

tentatively suggests that Facebook users who post positive “transformation” posts are likely to experience positive social feedback, whereas posts about negative change over time, or no change at all, are less likely to receive positive feedback. However, in addition to their positive valence and temporal context, transformation posts have two notable characteristics that were important considerations in setting up our methodology for Study 1: (1) They include photos, and (2) they frequently show change over time in the domain of health and fitness (Adams, 2016). The purpose of Study 2 was to determine the importance of photos and fitness-related content for the effects of valence and temporal context on social support provided on social media. As such, Studies 2a and 2b were comparable to Study 1 but with several notable changes. As Studies 2a and 2b used very similar procedures, measures, and goals (albeit with slightly different stimuli across the two), we report these studies together for the sake of simplicity and concision.

First, in both Studies 2a and 2b, participants viewed purported Facebook posts that contained text but did not contain photos. Further, Study 2b included additional instructions prompting participants to imagine the visual cues without actually seeing them. This was done to enhance the similarity in experience to Study 1 without actually using photos. Research has shown that visual and textual cues are sometimes weighted differently, such that profile viewers prioritize visual cues (i.e., photos) when processing social information on social media (Van der Heide et al., 2012). Therefore, the visual component of transformation posts may be crucial in eliciting supportive reactions from other users. Second, Study 2a tested the role of domain in social support intentions by manipulating whether posts were about users’ health/fitness or academic performance. As indicated above, health and fitness tend to be common themes in “transformation” posts with contextual details, perhaps because this domain is uniquely suited to demonstrate visual changes over time. Third, and finally, because Study 1 did not reveal differences between recent past and distant past, this distinction was not made in Study 2. Instead, all captions referred to the user’s younger self. In sum, the purpose of Study 2 was to examine the role of key characteristics of typical “Transformation Tuesday” posts (i.e., photos, fitness-related content) in eliciting social support.

## Method

### Participants and design

We recruited two samples of 176 (Study 2a) and 121 (Study 2b) participants from the same university as Study 1. Study 2a used a 2 (post valence: positive or negative) X 2 (temporal context: context or no context) X 2 (domain: fitness or academics) design, with the last factor manipulated within-subject. Study 2b used a 2 (post valence) X 2 (temporal context) between-subjects design. Study 2a had a larger sample size than Study 2b due to the larger design. As in Study 1, we stopped data collection at the end of the week after reaching the desired sample sizes (176 and 120, respectively).

### Procedure and materials

As in Study 1, participants in Study 2 came to the lab in groups of 1–4, sat at individual computers, provided informed consent, and completed initial questionnaires using MediaLab software as part of a larger study. Next, they viewed examples of Facebook posts that differed by study and experimental condition (described below). All participants answered manipulation check questions and reported their intentions to provide social support.

**Table 3.** Photo captions in Study 2.

Condition	Example Caption
Positive, Temporal Context	"I used to struggle with my weight and being in-shape, but today I went for a long run and felt great! I'm grateful to be healthy enough these days to work out and feel good."
Positive, No Context	"I'm happy to say that I got good grades this semester! Really proud of my hard work."
Negative, Temporal Context	"I'm sad to say that I got bad grades this semester. I did very well in high school, but I haven't been working really hard lately. So disappointed in myself."
Negative, No Context	"Today I tried to go for a long run and felt terrible. I wish I was healthy enough to work out and feel good."

**Study 2a.** Participants in Study 2a viewed two Facebook posts: one related to fitness and one related to academic achievement (in a counterbalanced order). Captions were similar to those used in Study 1, but differed slightly because no photos were used. See Table 3 for example captions for each experimental condition in Study 2a.

**Study 2b.** First, participants in Study 2b read a scenario that asked them to imagine logging into Facebook and seeing a post from an acquaintance. Scenarios differed by condition. For example, the scenario for the positive, temporal context condition read, "Imagine that you just logged into your Facebook account. The first post on your newsfeed is from an acquaintance. This person posted two photos of themselves, showing that they are now healthier and fitter than they used to be." Second, participants saw an example of the post they were asked to imagine. These posts were similar to those used in Study 1, but blue squares replaced the photos. In other words, participants saw posts with placeholders for photos and imagined the photos. All scenarios and posts in Study 2b were related to fitness.

### Measures

Study 2 used the following relevant measures.

**Social support.** Participants reported their intentions to provide social support in the form of "likes" and comments, using the same scale described in Study 1.<sup>3</sup> We z-scored and combined the items to form two social support intentions scores for Study 2a, one for the fitness-related post ( $\alpha = .65$ ) and one for the academics-related post ( $\alpha = .65$ ). For Study 2b, we z-scored and combined the items to create one social support intentions score ( $\alpha = .67$ ).

**Manipulation checks.** Manipulation check questions differed slightly between Study 1 and Study 2. For example, the fitness-related item read, "In the post you just read, which statement best describes how the person's health and fitness changed?" Participants chose one of four response options: (1) "The person is healthier now than they were in the past"; (2) "The person is less healthy now than they were in the past"; (3) "The person is healthy. They did not mention a change"; or (4) "The person is unhealthy. They did not mention a change." Study 2a included two manipulation check questions (one for each domain), while Study 2b included one manipulation check question.

## Results and discussion

### Manipulation checks

As in Study 1, we scored manipulation check questions for correctness. In Study 2a, 103 participants (58.5%) answered both manipulation check questions correctly. 157 participants (89.2%) answered at least one manipulation check question correctly. In Study 2b, 62 participants (51.2%) answered the manipulation check question correctly. As in Study 1, excluding participants based on manipulation check scores did not change the pattern of results. Therefore, we retained all participants in analyses to preserve statistical power.

### Study 2a

We submitted social support intentions to a 2 (post valence) X 2 (temporal context) X 2 (domain) mixed-model ANOVA, with the last factor manipulated within-subjects. There was a large main effect of valence, such that participants were more likely to provide support for positive posts ( $M = .27$ ,  $SD = .50$ ) than for negative posts ( $M = -.27$ ,  $SD = .59$ ,  $F[1, 172] = 44.47$ ,  $p < .001$ , partial  $\eta^2 = .21$ ). There was no main effect of temporal context ( $F[1, 172] = 2.98$ ,  $p = .09$ , partial  $\eta^2 = .02$ ) and no interaction between valence and temporal context ( $F[1, 172] = .65$ ,  $p = .42$ , partial  $\eta^2 = .004$ ). There was also no main effect of domain ( $F[1, 172] < .001$ ,  $p > .99$ , partial  $\eta^2 < .001$ ) and domain did not interact with valence or context ( $F$ 's  $< 1.99$ ,  $p$ 's  $> .16$ , partial  $\eta^2$ 's  $< .02$ ).

### Study 2b

We submitted social support intentions to a 2 (post valence) X 2 (temporal context) between-subjects ANOVA. Consistent with Study 1 and Study 2a, there was a large main effect of valence, such that social support intentions were higher for positive posts ( $M = .26$ ,  $SD = .60$ ) than for negative posts ( $M = -.26$ ,  $SD = .72$ ,  $F[1, 117] = 17.51$ ,  $p < .001$ , partial  $\eta^2 = .13$ ). There was no main effect of temporal context ( $F[1, 117] = .01$ ,  $p = .92$ , partial  $\eta^2 < .001$ ) and no interaction between post valence and temporal context ( $F[1, 117] = .12$ ,  $p = .73$ , partial  $\eta^2 = .001$ ).

### Summary

The purpose of Study 2 was to identify which components of a transformation-style SNS post are necessary to elicit social support. In Study 2a, participants viewed posts that differed in domain (fitness or academics). Both domains showed the same pattern of results, such that positive posts elicited more social support than negative posts. In Study 2b, a prompt instructed participants to imagine seeing a post that included photos, and they saw screenshots of Facebook posts with placeholders where photos would be. Again, positive posts elicited more social support than negative posts. The large main effects of post valence across all studies imply that positive Facebook posts elicit noticeably more social support than negative Facebook posts. Visual information was unavailable in Study 2, and temporal context did not significantly affect social support intentions. Taken together, these results highlight the importance of visual information and domain in determining the impact of temporal context on social support intentions.

### General discussion

As the popularity of social media continues to grow, its users are increasingly turning to SNSs such as Facebook for social support. Using SNSs, users can obtain support from distant acquaintances as well as close friends (Rozzell et al., 2014), yielding benefits beyond those incurred from offline social support (Cole, Nick, Zelkowitz, Roeder, & Spinelli, 2017). The purpose of the present research was twofold: (1) to determine the effects of post valence and temporal context on other SNS users' intentions to provide social support online, and (2) to identify which components of transformation posts (i.e., positivity, temporal context, and visual change) are most crucial for eliciting social support on SNSs. There were several notable findings across the set of studies.

First, we found consistent and robust evidence across studies that positive posts (e.g., content conveying that someone is healthy and fit) receive greater social support than negative posts (e.g., content conveying that someone is unhealthy and unfit).<sup>4</sup> Moreover, this effect occurred regardless of the domain under investigation (see Study 2a). This result is consistent with prior research (Hollenbaugh & Ferris, 2015) and may be due to established norms and habits for rewarding positive expression but not negative expression on Facebook (High et al., 2014; Qiu et al., 2012), or to a genuine enjoyment of positive "transformation" posts, which may be viewed as inspirational and uplifting. In support of the latter point, supplemental measures in Study 1 showed that participants who saw positive posts demonstrated a more positive change in mood than those who saw negative posts ( $F(1,$

279) = 6.16,  $p = .01$ , partial  $\eta^2 = .02$ ). Additionally, this effect may be due to an overall tendency to not like people who are too pessimistic or negative (Helweg-Larsen, Sadeghian, & Webb, 2002). Thus, it appears that people who may need social support the most are, somewhat ironically, less likely to receive such support on social media (see also Forest & Wood, 2012).

Second, the results of Study 1 provided some evidence for the impact of temporal context on social support. For instance, participants who viewed posts that included temporal context were more likely to provide social support. Providing a context allows the content to take on a nuanced meaning. For instance, simply viewing a picture of a healthy person is not particularly noteworthy; however, viewing a picture of a healthy person with additional contextual information about their past self may be more meaningful. Additionally, there was an interaction between temporal context and valence, wherein the temporal effect was most impactful for positive posts. Specifically, among positive posts, those that included a temporal context (i.e., posts that demonstrated improvement over time) were more likely to elicit social support than negative posts or positive posts with no temporal context. As noted previously, describing one's accomplishments on social media (e.g., being fit) is often considered boastful. However, when SNS users post about their improvement over time, they acknowledge their imperfection and may come across as more relatable and genuine. This, in turn, might make people more willing to provide social support. On the other hand, the norms against negative self-content and expression might simply be too strong to allow contextual details to change social support. Thus, the people who may need social support most do not benefit from providing temporal context for their posts. Social norms regarding social support on SNSs may also have been impactful. Because "Transformation Tuesday" is a very popular phenomenon on multiple SNSs (Moreau, 2017), participants may have provided social support for positive posts with temporal context out of habit and adherence to social norms.

It is also important to note that in both the positive and negative temporal context conditions, the targets took responsibility for the change in their fitness. These internal attributions were kept consistent across valence conditions so as not to create a confound. Despite the consistency, it is possible that participants declined to provide social support in the negative conditions because they blamed the target for their circumstances. As a supplemental measure, participants in the temporal context conditions answered two questions targeting participants' attributions: (1) How much control did this person have over their change? (1 = *No control at all*, 5 = *A great deal of control*), and (2) How responsible was this person for their change? (1 = *Not at all responsible*, 5 = *Very responsible*). These 6 items (2 for each target) were combined to create a composite index ( $\alpha = .89$ ). An independent samples t-test showed that targets who experienced positive change were actually judged as being more responsible for and having more control over their transformation ( $M = 4.63$ ,  $SD = .50$ ) than targets who experienced negative change ( $M = 3.92$ ,  $SD = .80$ ),  $t(185) = -7.40$ ,  $p < .001$ ). This suggests that attribution differences cannot fully account for the results of Study 1.

Finally, an important caveat to these results is that the main and interactive effects involving the temporal manipulation were quite different across Studies 1 and 2. In Study 1, participants viewed posts that included rich visual information depicting change in their health/fitness over time. In Study 2, where participants did not see pictures of the user's change over time, temporal context did not have any main or interactive influences on social support intentions. Rich visual information appears to be necessary for the effects of temporal context to emerge. The importance of photos here is consistent with the extant literature on social media and visual cues. SNS users primarily define their online identities and convey information using visual cues (Eftekhar, Fullwood, & Morris, 2014; Zhao, Grasmuck, & Martin, 2008). Similarly, when forming impressions of others, SNS users primarily focus on visual cues, using textual information when visual cues are ambiguous or unavailable (Ivcevic & Ambady, 2012; Van der Heide et al., 2012). Accordingly, transformation posts typically include photos (Adams, 2016). It is likely that textual information simply was not powerful enough to fully convey the magnitude of improvement over time. Moreover, this may be why fitness is a particularly popular domain in which to convey self-improvement on SNSs: it is suitable for strong visual representations of change and is therefore likely to garner social support

and validation. In sum, the results of these studies suggest that SNS posts depicting self-improvement are likely to garner support and validation from other users, but only when they include a visual representation of improvement.

### **Limitations and future directions**

This research had several notable limitations. First, SNS posts were presented in isolation, without the rest of the target person's profile. SNS users sometimes look to "other-generated" information, such as posts by the target person's friends, to form an impression of the target (Rosenthal-Stott et al., 2015). We chose to present posts in isolation in order to identify the effects of temporal context. However, exploring additional contextual cues would be a useful direction for future research, as it would more closely resemble everyday use of social media.

Second, posts with and without photos were not directly compared within the same study. The pattern of results across three studies strongly suggests that photos serve an important role in determining social support intentions in transformation posts. Indeed, across two studies and two disparate domains, social support intentions were not affected by temporal context when photos were not involved. However, the design of the present research did not allow for a direct test of the importance of photos in eliciting social support. It would be informative to experimentally test the effects of photo inclusion within the same study by randomly assigning participants to view posts with or without photos.

Third, the results of Study 1 (wherein positive posts with temporal context were highly likely to elicit social support) may not entirely generalize to domains other than fitness. Weight loss and other appearance-focused domains (e.g., beauty) are common for "transformation" posts (Adams, 2016), perhaps because they are conducive to posting photos. Therefore, the posts used in this study are fairly representative of posts that include temporal context. Indeed, Study 2a provides some evidence that our findings might be constrained to health- and fitness-related domains (though it is notable that no visual information was included in this study, which may be critical regardless of domain). Moreover, it is also important to note that aspects of weight loss itself may have influenced results beyond factors related to temporal context. First, being overweight is considered highly controllable in Western culture (Puhl & Heuer, 2010). Accordingly, targets in the present study were portrayed as taking responsibility for their weight change in both the positive and negative conditions. In the negative conditions, the targets' self-blame (e.g., "I wasn't careful about my diet and exercise") may have prompted participants to also blame the targets and subsequently offer less social support. Likewise, in the positive conditions, the targets' focus on their positive behaviors (e.g., "I'm proud of how hard I worked to get the body I have today") may have prompted participants to attribute positive outcomes to the targets' behavior and to offer further encouragement. Though supplementary data we collected suggest that control and personal responsibility cannot fully explain the results (see above), it is nonetheless an important part of the story that may not exist across other domains. Second, it is generally considered acceptable in Western culture to criticize others' weight (Puhl & Heuer, 2010). Consequently, participants may not have been inclined to offer support for the target person's negative circumstances. It is possible that negative posts in another domain, such as relationships, may have elicited more support. Future research in this area could experimentally manipulate the causes targets ascribe to their change, as well as using different domains that still allow for visual representations of change.

Finally, the present research was conducted in a lab setting using target people that were previously unknown to participants, and measured intentions to provide social support (rather than actual social support). Among real-life friends and acquaintances, extraneous factors are likely to affect social support intentions. Importantly, close and non-close others are both important sources of social support on SNSs (Nabi et al., 2013; Rozzell et al., 2014). Therefore, it is likely that these results would apply to both acquaintances and close friends, not just strangers. Nonetheless, measuring participants' reactions to various types of posts on their real social media accounts would provide a more complete picture of the roles of post valence, temporal context, and photos in determining social support intentions.

## Conclusions

As the nature of interpersonal communication rapidly evolves, it is important for researchers to understand the nature of social support on social media. Our research can be positioned alongside prior research investigating such issues in the context of online communication, and has several implications. First, our research bolsters and extends prior research in several literatures, including work highlighting the differences between social information presented in visual versus textual form (e.g., Eftekhari et al., 2014; Van der Heide et al., 2012) and the finding that people who post positive content are more likely to receive social support than those who post negative content (e.g., Forest & Wood, 2012; Park et al., 2016). Second, our research offers some practical guidance for social media users looking to attain social support. For instance, our research suggests that social support is much more likely when posting positive self-related content than negative self-related content. Additionally, our research suggests that social support for positive content can be enhanced using temporal contextual information that highlights a person's transformation—particularly if pictures are used. However, temporal contextual information does not appear to enhance social support for negative content. For instance, highlighting a more positive past self does not appear to encourage other users to provide social support in the contexts studied here. This suggests that the people who may be most in need of social support are less likely to receive it. In sum, when it comes to seeking social support, emphasizing self-improvement may be the most effective way to elicit social support on social media.

## Notes

1. Materials and data are publicly available for download through our Open Science Framework page at <https://osf.io/rstc5/> (DOI: 10.17605/OSF.IO/RSTC5).
2. To examine the effects of participant gender, social support intentions were submitted to a 2 (Gender: Male or female) X (Post valence: Positive or negative) X 3 (Temporal context: Distant past, recent past, or no context) between-subjects ANOVA. Gender had a significant effect on social support intentions, such that women had higher social support intentions ( $M = .14$ ,  $SD = .64$ ) than men ( $M = -.16$ ,  $SD = .66$ ;  $F(1, 277) = 12.69$ ,  $p < .001$ ). However, gender did not interact with post valence ( $F(1, 277) = .29$ ,  $p = .59$ ), temporal context ( $F(2, 277) = .47$ ,  $p = .62$ ), or the post valence X temporal context interaction ( $F(2, 277) = .68$ ,  $p = .51$ ). The main effects and interaction described above remained significant when gender was included in the model.
3. Although Studies 1, 2a, and 2b were all conducted in 2016, Facebook made a slight change to its response options during this time. Users can now indicate different responses with a simple click. In addition to “like,” users can click “love,” “haha,” “wow,” “sad,” or “angry” to convey a wider range of reactions. The wording of the social support items in Study 2b was adjusted slightly to account for these different response options. For example, participants were asked, “If you logged into Facebook and saw this post from an acquaintance, how likely would you be to press the ‘like’ button (or another reaction button, such as ‘love’ or ‘sad’)?” (1 = *not at all likely*, 5 = *very likely*).
4. Our valence manipulation of health/fitness status likely also manipulated perceived attractiveness of the target because a thin, lean physique is considered attractive for both men and women in Western culture (e.g., Cafri, Yamamiya, Brannick, & Thompson, 2005; Tod, Edwards, & Hall, 2013). Thus, one could speculate that any results found on the valence manipulation could also be due to an attractiveness effect. However, several findings speak against this interpretation. First, the main effect of valence was replicated in Studies 2a and 2b where no pictures were used (Studies 2a and 2b) and a non-fitness related context was assessed (Study 2a). Second, target attractiveness cannot account for the effects of temporal context in Study 1. Participants in the conditions that included temporal context saw both the more attractive and less attractive photos of the target people (i.e., “before and after” photos) in the same photo sets. This suggests that although photos are an important component of gaining social support from “transformation” posts, attractiveness is not a viable explanation for these results.

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