Bits of emotion

The process and outcomes of sharing emotions online

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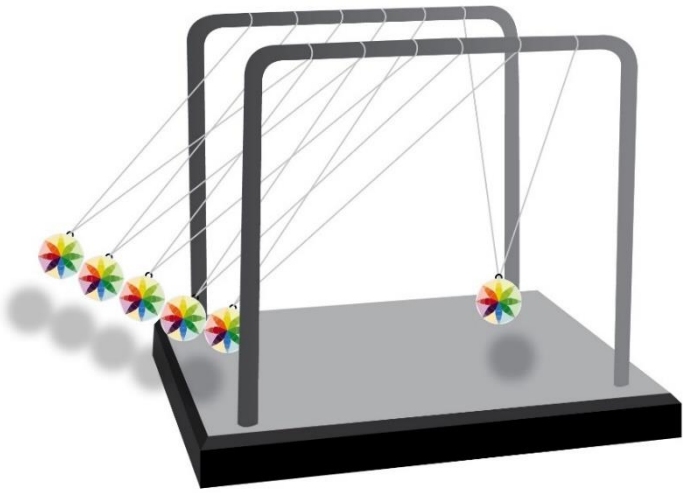
Chapter 5

Don’t stress me now:

The impact of face-to-face and online feedback prosociality on stress during an important life event



Abstract

The question of how online feedback impacts stress is still unresolved. This study investigates the interplay between online and face-to-face (FtF) feedback on stress during an important life event. A two-month, six-wave longitudinal study of 257 Chilean adolescents who took a national competitive university selection test, the PSU, similar to the U.S. SAT's, assessed the longitudinal relationships between online feedback prosociality, FtF feedback prosociality and participants' stress. Cross-lagged random intercept models showed a reciprocal reinforcing effect between FtF feedback and stress during test taking, while stress slightly increased online feedback prosociality after test taking. Unlike FtF feedback, online feedback downregulated stress, both at the short (few days) and longer term (three weeks), but only during the last phases of the test. The data suggests that effects of FtF and online feedback can be differentiated at the within-person level and are dependent on the emotional context users find themselves in.

During a stressful life event, people often seek support from others (Cohen & Wills, 1985). In an online context, the beneficial effects of supportive replies have generally found support in the literature. For instance, online support can alleviate feelings of stress after losing one's job (Burke & Kraut, 2013). However, research on this topic is not unequivocal: A six-wave longitudinal study by Utz & Breuer (2017) found no long-term relationships between online social support and stress. In addition, little is known about how the effects of online and offline support on stress may differ or complement each other. Relevantly, online social support has been found more effective in providing informational rather than emotional support (Trepte, Dienlin, & Reinecke, 2015), while face-to-face (FtF) communication is generally assumed to be a 'better' medium than online contexts to support others (Sundar, 2008). To increase our understanding of the dynamics between online and offline support, this paper examines how the emotional effects of prosocial feedback vary over the course of a stressful event over time.

To answer this question, this paper analyzes the contribution of online and FtF support to decrease stress levels, adopting the lens of emotion regulation theory (Gross, 2007) and focusing on the effect of feedback prosociality, that is the perceived degree to which online and FtF feedback are perceived to be helpful and beneficial. We assess how feedback prosociality affects stress across six measurements, which correspond to the natural course of a real-life stressing event: the Prueba de Selección Universitaria (PSU), Chile's university admission's test, which is equivalent to the U.S.'s Selection Aptitude Test (SAT). This study uses the PSU as natural example of an important life stressor which has a large impact and is emotionally dynamic in nature (Folkman & Lazarus, 1985). Chile represents a good case study, with its high levels of Internet penetration (88% of homes having Internet access) and of social media (92% of Internet users being active, Raby, 2018, n.d.), levels which are similar to for example the United States.

To assess relationships, we employ the random intercept model (Hamaker, Kuiper & Grasman, 2015) to disentangle within from between person relationships. This is in line with contemporary media studies which suggest that any causal media effect needs to be established within rather than across persons (Nikkelen et al., 2014). In our case, we investigate the reciprocal effects of individual changes in feedback prosociality on individual changes in emotion. Further, our analysis employs differing time-lags, which are tailored to the natural occurrence in a chain of stressful events which are part of the PSU. In this way, this study adds to emergent literature by assessing effects in short-timed lags (e.g. a few days, Bayer et al., 2018; Choi & Toma, 2014), as well as long-timed lags (e.g. a few months, Utz & Breuer, 2017).

The present study thus aims at: (a) clarifying the effects of online and FtF feedback on the regulation of stress; (b) proposing an approach focussing on the emotional nature of important life events; (c) longitudinally examining between-person and within-person processes. An understanding of how the dynamics of offline and online feedback may contribute to regulate stress seems further relevant to people's mental health (Lazarus, 1996). More generally, the study aims to bring insights as to whether and how online social support may help users to cope when facing life-stressing events.

Theoretical framework

The effects of social support on stress

Stress is defined as a physical and psychological reaction which occurs when a person appraises a situation as (a) threatening, (b) personally significant, and (c) exceeding their resources to cope or face it (Lazarus, 1996). Health-related outcomes of stress include increased levels of physiological arousal and negative affect (Folkman, 2013). In their seminal work, Cohen and Wills (1985) proposed that social support reduces or weakens the associations between stress and negative health outcomes, like stress and anxiety. This stress-buffering hypothesis has gained broad empirical support both offline (e.g. Pluut, Ilies, Curseu, & Liu, 2018) and in SNSs (e.g., Zhang, 2017).

Shumaker and Brownell (1984) characterized social support as 'an exchange of resources between at least two individuals, perceived by the provider or the recipient to be intended to enhance the well-being of the recipient' (p. 13). In our case the exchange narrows down to a process of one person disclosing or sharing a negative emotion, followed by feedback perceived as intended to enhance the discloser's well-being. Specifically, and in line with Cohen and Wills (1985), we argue that social support can buffer the deleterious effect of stress in two ways, namely through informational and affective support. First, informational support enhances the ability to prevent or cope with stress, because timely advice or information increases a sense of control over the environment (Pearlin, Menaghan, Lieberman & Mullan, 1981), which is characteristically lacking in stress. Consequently, informational support has been found to buffer symptoms of momentary stress such as increased blood pressure (Bowen et al., 2014). In case of the PSU, informational support may include a wide range of information, ranging from the best way to reach the test location to information on how to best approach the test. This information may aid students' sense of control not only when facing the exam but throughout its entire process.

Second, affective support, which consists of empathetic and sympathetic feedback, fosters self-acceptance, relieving stress (Cobb, 1976). Further, affective support decreases

the feeling of loneliness in dealing with events and can make individuals feel esteemed and appreciated (Cohen & Wills, 1985; Rimé, 2009). In case of the PSU, emotional support may reinforce students' self-worth regardless of the test's outcome, as well as reinforce their beliefs in their own abilities.

Feedback prosociality and interpersonal emotion regulation of stress

The beneficial character of both informational and affective support may be regarded as prosocial, or 'voluntary behaviour that benefits others or promotes harmonious relations with others' (Dovidio, Piliavin, Schroeder, & Penner, 2006). To assess impact of social support on stress, we focus on the perceived prosociality of feedback, or the degree to which feedback is judged to be prosocial or helpful by the receiver.

Prosocial feedback may occur as a reaction to an emotional disclosure. The high intensity of a disclosed emotional experience is a major factor, as it immediately triggers a desire to help by providing social support to the discloser (Rimé, 2007, 2009). Emotion regulation in the context of social support is conceived as an interpersonal process (Rimé, 2007; Zaki & Williams, 2013). Generally, emotion regulation comprises a broader process to manage (maintain, increase or decrease) the intensity of an emotional experience (Gross, 2007). It is argued here that prosocial support helps disclosers manage their stress, diminishing its felt intensity.

FtF, online support and the regulation of emotions

Although the traditional medium for social support is FtF interaction, nowadays support is amply requested and obtained through social media (Rodríguez Hidalgo, Tan, & Verlegh, 2015). Both media possess different characteristics which may affect support provision. FtF has been recognized as high in proximity and warmth, thanks to its rich presence of haptic, audio-visual and kinesic cues, making it effective to provide social support, especially in a situation which is ambiguous, important or emotional (Daft & Lengel, 1986). In FtF communication, support is often provided by relationally close others, such as close kin, partners and best friends. This may further enhance the effectiveness of this medium, because strong ties know the sharer and are aware of best methods of support (Rimé, 2009).

However, is FtF communication necessarily the best means of social support? Notably, studies assessing the effectivity of FtF feedback to social sharing have consistently found that feedback is not usually effective in decreasing the impact of the emotional experience (Rimé et al., 1998). Although people may readily self-disclose their emotional experiences to others, and others readily provide feedback, sharers do not usually end up feeling better afterwards

(Rimé, 2009). The reasons are first, that effects of feedback vary depending on the emotion being shared. A daily study on the social sharing of emotions found, for example, differential results for sharing anger compared to sadness (Brans, Van Mechelen, Rimé, & Verduyn, 2014). Second, feedback does not always match the expectations of the sharer. In a series of experiments, Wetzer, Zeelenberg and Pieters (2007) found that the outcomes of sharing depended on the congruency between feedback and the disclosers' felt emotion.

The same reasons why FtF could be considered more effective may also warrant opposite effects. First, its physical proximity makes it high in synchronicity and immediacy, which means that people usually must make quick choices as to the desired reply, which may easily be wrong. Second, FtF communication is highly subject to social and cultural rules (Hochschild, 1983), entailing, for instance, a preference for receiving affective feedback immediately after disclosing negative emotions, instead of more cognitive replies (Rimé, 2009). This proposition was confirmed in an experimental study which found that individuals strongly disliked receiving cognitive comments right after sharing sadness, due to the perceived coldness and insensitivity of more rational replies (Pauw, Fischer, Sauter, & Van Cleef, 2018). Notably, informative support is more effective in diminishing the negative impact of an emotional experience in the long term (Rimé, 2009), because immediate acceptance of the feedback requires greater cognitive effort than is feasible at the moment in the midst of an emotional event. Taken broadly, this evidence challenges the common assumption that FtF feedback would be more effective to provide effective support for managing negative emotions.

The affordances of online communication for support provision

The idea that online communication is a cold and slow medium to communicate, exchange emotions, or provide social support due to its asynchronicity and reduced social cues (Daft & Dengel, 1986), has given way to a more optimistic view focusing on its affordances and possibilities (boyd, 2008; Walther & Parks, 2002). In the context of social support, we argue that at least four affordances shape online communication, which may explain differential effects compared to FtF communication.

First, online communication exchanges are more prone to disinhibition than FtF interactions (Tidwell & Walther, 2002). Disinhibition may propitiate the initiator of the disclosure not only to provide full accounts of their emotional experiences, but also help receivers of these emotional disclosures to provide more disinhibited support. However, it must be acknowledged that disinhibition may also facilitate non-prosocial feedback or feedback which may harm the individual. Yet, there is a second social media affordance which could help to balance feedback, which is its asynchronous character. As noted earlier, social media

generally provide greater time for both the initiator and the responder to think ahead of sharing and replying. This high message controllability (Walther & Parks, 2002), actually the opposite of disinhibition, enables feedback providers to think ahead of a reply, which may render SNSs especially suitable to provide instrumental and emotional support, because both sharer and initiator gain greater time for reflection.

Thirdly, social media allows individuals to include members of distinct social circles on their friends' networks, such as good friends, family members, acquaintances, colleagues, classmates, etc. This allows users the comfort of sharing one message to multiple recipients, regardless of geographical barriers, increasing thus the accessibility of messages to a large and diverse group. In this way, this accessibility affordance widens the variety of perspectives offered by replies (Peter & Valkenburg, 2013; Trepte et al., 2015).

Fourth, the content of online interactions is persistent and retrievable (boyd, 2010; Peter & Valkenburg, 2013). In comparison, FtF communication is evanescent: Unless recorded, its content is easily lost and subject to the individuals' memories. Since cognitive replies to an emotional situation usually require more time to be assimilated (Rimé, 2009), the effectivity of FtF communication may be hindered by the fragility of individuals' memories. In contrast, the greater retrievability of online content implies that content can always be revisited, which may be more effective in the longer term as individuals could easily re-access this content.

On a final note, the affordances of social media, namely, asynchronicity, message controllability, accessibility, and persistence, can be taken as strengthening a possible effect of feedback prosociality. However, it can still be easily argued that FtF communication brings higher proximity and warmth. Additionally, and as noted, the same affordances may be used with negative or anti-social purposes. Therefore, instead of asking which mode makes for more prosociality, the better question to ask is how the two align in facilitating prosocial feedback and emotion regulation.

Assessing the interplay between online and FtF support

As to the effects of online support on emotions, the available evidence seems to point out that SNS usage may bring immediate improvement of affect some minutes after posting to up to 30 minutes later (Bayer et al., 2018). Further, sharing emotions on SNSs may bring an intensification of affect after three weeks (Choi & Toma, 2014). Although these findings suggest an immediate and longer-term emotional effects of SNS usage, it is not clear to what extent this is applicable to the relationship between online feedback prosociality and stress. We therefore formulate the following research question:

RQ1: *What are the effects of online versus FtF feedback prosociality in the regulation of stress over the course of a life stressor event?*

Emotion effects on feedback: The reciprocal effect

Reciprocity of media effects is spearheaded in recent research and nowadays there is general agreement that media effects tend to be reciprocal (Valkenburg & Piotrowski, 2017). So far, we have considered feedback effects on individuals' emotions, but the reciprocal effect may also occur, that is the intensity of emotion displayed in the initial act of sharing may affect the feedback provided. In FtF communication, it seems as if people would do their best to provide supportive feedback when seeing someone in distress, as receiving a request for social support usually triggers a desire to provide beneficial feedback (Rimé, 2007; Zaki & Williams, 2013). Similarly, with regards to online environments, there is also evidence that beneficial feedback usually occurs in response to requests of social support (e.g., Ballantine & Stephenson, 2011). More specifically, research has shown that being exposed to stressful circumstances triggers receiving social support (Barrera, 1981). The literature on emotion regulation states that disclosure of negative emotion for sharing is triggered in part by their intensity (Rimé, 2009). Thus, the intensity of the stress felt by a person would influence the likelihood of their sharings and the intensity of requesting social support, which, in turn, will boost the prosociality of the received feedback.

H1: The more that people feel stress about the PSU, the more that feedback will be prosocial.

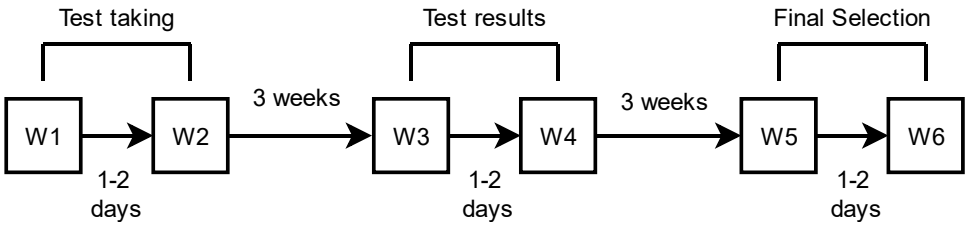
Method

The research context: The PSU and its main events

The University Selection Test (PSU by its Spanish acronym) is a standardized annual national test for students in Chile, which assesses cognitive abilities based on competencies and skills learnt at high school. The PSU determines entry to a consortium of 32 select Chilean universities. These universities can host only 27% of all PSU takers (295,000 in 2017). Failing the test means either entering less select universities or retaking the test a year later. Participating in the PSU consists on the following main events: (a) test taking: students perform the required maths and language tests; (b) test results: students receive their scores and, at the same time, apply to at least 10 institutions and career programs; (c) final selection: students learn about which application options were successful and choose one. The three

events occur three weeks apart and the entire PSU process spans two months. Calendar dates are: test taking (ends November), test results (ends December) and final selection (ends January). As depicted in Figure 1, a survey wave was conducted before and after each PSU event.

Figure 1. Time course of the three main PSU events with study waves



Sample. A total of 475 participants were recruited for the study. Recruitment of subjects was carried out by a professional data collection company, affiliated to one of Chile's universities. At the first wave, complete data was provided by 91.58% of participants (435). The number of participants from wave one onwards was: 435, 404, 354, 341, 287, 280. A total of 280 participants fully responded until the sixth wave. From these, 20 had taken the test for a third time, while three had done so for the fourth time. Because taking the PSU for the third and fourth time may lead to habituation, the sample used in our analyses comprises those participants who answered all the six waves and declared to take the test for the first or second time only (n = 257). Students' high school grade point average (GPA) was a 6.0 (grades in Chile are from 0 to 7). Seventy one percent of participants (66% female; 3.4% 17 years, 78% 18-19 years, 17.7% 20-25 years), attended extra classes to prepare for the test ('pre-university school'), which is common in Chile. The most frequently used SNS platforms were Facebook (72%, 1-4 hours daily) followed by WhatsApp (54%, 1-4 hours daily).

Procedure. A local professional data collection entity administered the surveys via an online web platform and managed incentives. The first wave began at the end of November 2015 and the sixth wave took place at the end of January 2016. Participants received SMS messages with the survey link, which were sent by the data collection entity. For an incentive, participants could choose between receiving an electronic ticket to the cinema for every two completed waves or receiving the equivalent in money via an electronic bank transfer. Participants who answered all six waves received an additional ticket (or equivalent sum).

Measures

Sharing about the PSU. A multiple-choice item captured the number of platforms through which participants posted emotions about the PSU online. The instruction read 'please remember the last time you posted about the PSU. Please indicate through which online media you posted.' Platform choices were Facebook, Twitter, WhatsApp, Email, Snapchat, Instagram, Pinterest, You Tube, Skype, Blogs, and Fotolog. Sharing about the PSU remained relatively stable across waves. Means per wave were: W1: 2.55 (*SD* = 1.59), W2: 2.02 (*SD* = 1.33), W3: 1.51 (*SD* = 1.26), W4: 1.37 (*SD* = 1.25), W5: 1.21 (*SD* = 1.60), W6: 1.47 (*SD* = 1.63). The majority of participants shared (about the PSU) through WhatsApp (76% on first wave) and Facebook (65% on first wave).

Stress. Stress about the PSU was measured with items tailored to the specific PSU episode. Respondents could drag a slider from 0 (*not at all*) until 100 (*extremely*). Emotions were: 'nervous,' 'fearful,' 'stressed,' 'worried,' 'pressured.' These emotions were selected because they are commonly elicited during academic test examinations (Folkman & Lazarus, 1985). A principal component analysis verified that these emotions made up one factor explaining a proper percentage of the variance per wave (W1: 68%, W2: 60%, W3: 59.34%, W4: 76.46%, W5: 75.64%, W6: 50.19%). Hence, the items, averaged, were taken to represent a common construct 'stress.' Items were, using one emotion as example: "how (nervous) do you feel about taking the PSU tomorrow?" (W1); "how (nervous) do you feel about having taken the PSU yesterday?" (W2); "how (nervous) do you feel about finding out about your score results tomorrow?" (W3); "how (nervous) do you feel about having found out about your score yesterday?" (W4); "how (nervous) do you feel about finding out about your selection results tomorrow?" (W5); "how (nervous) do you feel about having learned about your selection results yesterday?" (W6). The order of appearance of the emotion items was randomized across waves to not prime participants[5].

Receiving online feedback. Online feedback was assessed by asking participants "Did you receive feedback to your conversation/social mention about the PSU?" Across waves, 61.4% of participants selected "yes" (W1: 139 , W2: 136, W3: 148, W4: 177, W5: 165, W6: 182).

[5] Next to the five items measuring stress, the questionnaire included other twelve additional items measuring positive as well as negative emotions. The full list can be obtained from the first author.

Online feedback prosociality. Based on the literature on social support and social sharing, we developed items which included descriptions of beneficial affective and cognitive feedback (Rimé, 2009) to measure feedback prosociality. For online feedback prosociality, participants were instructed to think about the feedback they received from others to their PSU post, and set a response slider between from 0 (*not at all*) and 100 (*extremely*) with the middle value representing neutral affect. Questions were: "To what extent did you feel supported by this feedback?"; "To what extent was this feedback empathetic?," "To what extent did you feel that the person who provided this feedback listened to you?," "To what extent did this feedback provide you with good advice?,"; and "to what extent did this feedback provide you with strategies to better deal with situations?" (Cronbach's alpha per wave: .95, .96, .98, .98, .97, .96). These items showed high correlations (Pearson's r ranged from .734 to .965 throughout waves). Further, a confirmatory factor analysis (CFA) of these items found a single factor explaining high percentages of the variance per wave (respectively, W1: 87.3%, W2: 88%, W3: .97%, W4: .94%, W5: .92%, W6: .91%). Consequently, the item scores were averaged to create a total score of feedback prosociality in each wave.

Receiving FtF feedback. To assess whether participants received FtF feedback, they were asked: "Did you receive feedback in a conversation about the PSU?" Answer categories were "*yes*" and "*no*." Across waves, 89.7% of participants selected "*yes*" (W1: 240, W2: 233, W3: 222,W4: 224, W5: 224, W6: 240).

FtF feedback prosociality. The construction of a measure for FtF feedback prosociality was analogous, with only a slight variation of instruction: "Please remember the last meaningful interaction that you have had talking with someone about the PSU." Questions were equal to the previous section. (Cronbach's alpha per wave: .95, .96, .99, .98, .97, .98). These items were highly correlated (Pearson ranged from .668 to .919 throughout waves). A confirmatory factor analysis (CFA) found a single factor explaining high percentages of the variance per wave (respectively, W1: 80.97%, W2: 79.77%, W3: 94.78%, W4: 87.36%, W5: 81.07%, W6: 89.18%). Consequently, the item scores were averaged to create a total score of feedback prosociality in each wave.

Analyses

To test our hypotheses, we employed the random intercept cross-lagged panel model (RI-CLPM; Hamaker et al., 2015) using maximum likelihood estimation. In common cross-lagged models, variance is aggregated per group or between subjects, leaving open whether effects are due to between or within-subject differences (Curran & Bauer, 2011). The RI-CLPM considers, first, the changes over time in measurements nested within individuals (within-

subject) level, and second, the more stable differences over time across individuals (between-subject relationships).

Figure 2 depicts the RI-CLPM which was estimated. Analyses were performed using Mplus (version 7.11, Muthén & Muthén, 2012). First, the intra-class correlation (ICC) for each of the three variables across the six waves was calculated. The ICC for online feedback prosociality was .47, indicating that 47% of the variance was explained by differences between participants, while the remaining 53% was explained by changes within a participant (i.e., within-person variance). The ICC for stress was .245, indication that 24.5% of the variance was explained by differences between participants, while 75.5% of the variance was explained by differences within subjects. The ICC for FtF feedback prosociality was .35, indicating that 35% of the variance was explained by differences between participants, while the remaining 65% was explained by differences within participants. These outcomes pointed at the need to disentangle within from between persons effects.

Our model specification followed the instructions of Hamaker et al. (2015). We created latent factors by regressing the observed scores for online feedback prosociality, FtF feedback prosociality, and stress on their own factors, with loadings constrained at one. Because we had six measurements, this resulted in twelve factors for each concept. Next, three random intercepts were created to capture the between-person variance for the variables online feedback prosociality, FtF feedback prosociality, and stress. We used the observed scores as indicators of the random intercept factors, and constrained each factor loading to one. The correlation between the random intercept factors reflects the extent to which stable between-person differences in stress, stable between-person differences in perceptions of online feedback prosociality, and stable between-person differences in perceptions of FtF feedback prosociality are intercorrelated. Autoregressive paths were included to measure the extent to which deviations in the scores of subjective emotions predicted score deviations in online feedback prosociality and FtF feedback prosociality, and vice versa. Within each wave, the residuals (or error term) of each variable were correlated. Because the measurements were unequally spaced between waves, equality constraints were added to the model, first to reflect the shorter-time frame between the waves with one-day difference (W1 to W2, W3 to W4, and W5 to W6), and second, to reflect the longer time frame between the waves with a three-week difference (W2 to W3 and W4 to W5 respectively).

Results

Table 1 presents descriptive statistics and correlations for stress and online feedback, and for stress and offline feedback, respectively. At the end of the process (wave 6), 55% (142) students indicated that they were admitted to the university and career of their choice, 44.35% only to the career, 35% (90) only to their preferred university. The percentages do not add up to 100% because at the end of the process, students are preselected to more than one choice, leaving it to them to decide for one career at a certain university.

The RI-CLPM model (see Figure 2) showed a good fit (CFI = .95, RMSEA = .05, 90% CI = [.04, .06], SRMR = .08). Our research question asked about the effects of online and FtF feedback prosociality on the regulation of stress. To aid comprehension, we first present results of the three main events of the PSU, each spanning a few days: test taking (W1 to W2), test results (W3 to W4), and final university selection (W5 to W6). Further, due to space considerations, all instances of 'feedback' (both FtF or online) refer to prosociality. Cross-lagged within-person results are provided first for FtF feedback on stress and then for online feedback on stress, respectively. During test taking (W1 to W2), FtF feedback significantly increased stress (β = .27, *SE* = .07, *B* = .35, $p < .001$), unlike online feedback (β = .03, *SE* = .08, B = .05, p = .63). During test results (W3 to W4), FtF feedback did not affect stress (β = -.08, *SE* = .08, B = -.15, p = .39), the same as online feedback (β = -.01, *SE* = .10, B = .01, p = .98). Finally, during final university selection (W5 to W6), FtF feedback showed no effect on stress (β = .03, *SE* = .09, B = .05, p = .75). However, online feedback significantly reduced stress (β = -.20, *SE* = .10, B = -.36, p = .04).

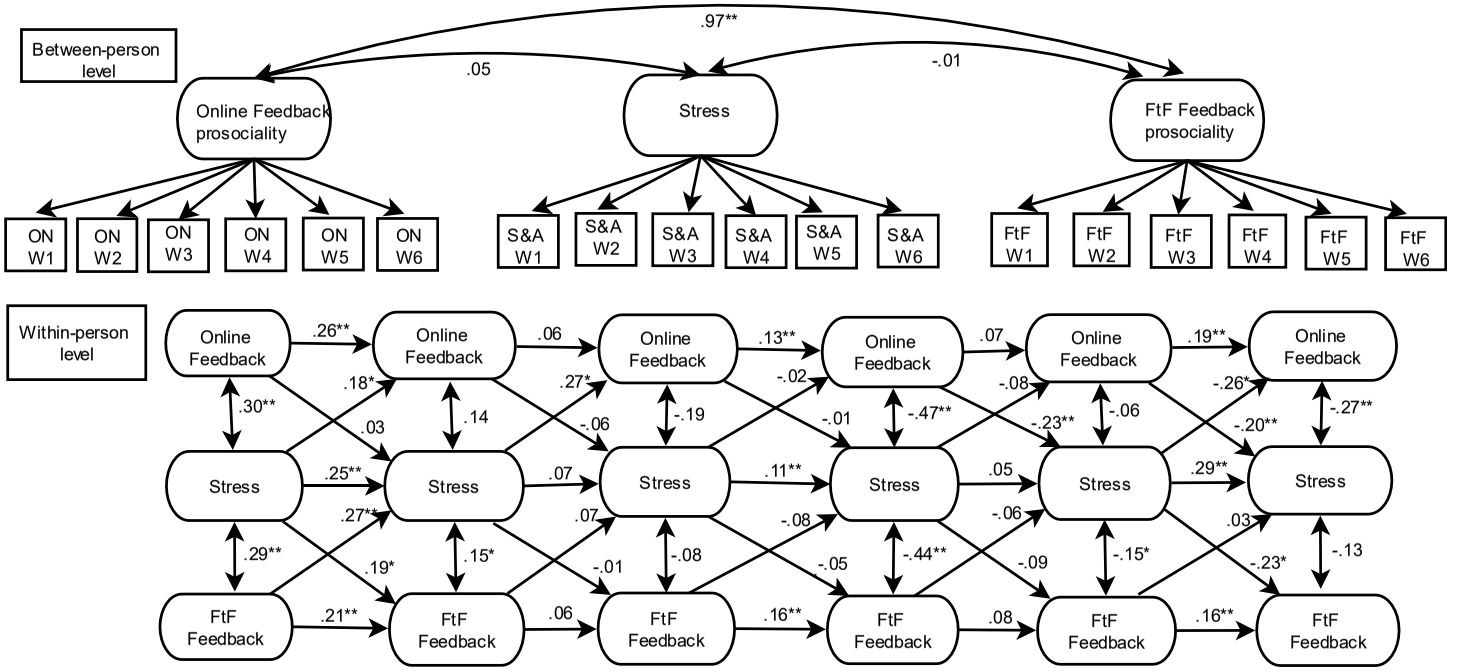
Next, we provide results for the two remaining pairs of waves in between the main PSU events, each with a three weeks' time-lag. After test taking and awaiting test scores (W2 to W3), both FtF (β = .07, *SE* = .09, *B* = .07, p = .49) and online feedback (β = -.06, *SE* = .11, B = -.07, p = .59) lacked significant effects on stress. In between learning about test results and final selection (W4 to W5), FtF feedback showed no effect on stress (β = -.06, *SE* = .09, *B* = -.11, p = .52), online feedback downregulated stress (β = -.23, *SE* = .10, *B* -.45, p = .03). To answer the research question, it was found that FtF feedback increased stress during test taking, while online feedback downregulated stress during both the long-term and short-term events of final selection.

Hypothesis 1 stated that the more that respondents felt stressed about the PSU, the more that feedback would be prosocial. Alike to the presentation of results for the research question, we attend first to the three short-termed events of the PSU. Cross-lagged results are provided for stress on FtF feedback, and for stress on online feedback, respectively.

During test taking (W1 to W2), stress significantly increased both FtF feedback prosociality (β = .19, *SE* = .07, B = .15, p = .01) and online feedback prosociality (β = .18, *SE* = .07, *B* = .04, p = .02). During test results (W3 to W4), stress did not affect FtF prosociality (β = -.05, *SE* = .07, B = -.08, p = .50), nor online prosociality (β = -.02, *SE* = .08, B = -.02, p = .81). Finally, during final selection (W5 to W6), stress significantly decreased FtF prosociality (β = -.23, *SE* = .07, B = -.11, p = .002), as well as online prosociality (β = -.26, *SE* = .07, B = -.12, p < .001). Results show support for hypothesis 1, but only during the short-term test taking event.

Results for the two remaining pairs of waves with a three weeks' time-difference revealed that after test taking and before test results (W2 to W3), stress did not significantly affect FtF feedback prosociality (β = -.01, *SE* = .08, B = -.01, p = .08), but it did significantly affect online prosociality (β = .27, *SE* = .09, B = .09, p = .01). In between learning about test results and final selection (W4 to W5), stress did not significantly affect FtF prosociality (β = -.09, *SE* = .07, B = -.54, p = .21), nor online prosociality (β = -.08, *SE* = .09, B = -.02, p = .30).

Figure 2. Random intercept cross-lagged panel model (RI-CLPM; Hamaker et al., 2015) of the relationship between Online Prosocial Feedback (OPF), stress and FtF prosocial feedback (FtF) across six waves. The model differentiates within-person variance and between-person variance. Path coefficients presented in standardized form. Ovals represent latent constructs. Residual correlations between error terms omitted for presentation parsimony.



*p < . 05, **p < .001.

Discussion

The present study aimed to further our understanding of the interplay between online and FtF feedback prosociality (i.e., users' perceived degree of beneficial feedback), with the regulation of stress over time. More specifically, it studied these relationships in the context of a common important life event, the course of a competitive academic exam, using data from six waves, spanning two months.

Employing an advanced methodological approach, study results shed light on the between and within-persons' dynamics of feedback prosociality across a natural longitudinal emotional stimulus. Further, the potential of perceived feedback prosociality for the downregulation of negative emotions, stress in particular, was studied. To aid comprehension, we discuss the hypothesized reciprocal effects of the intensity of stress disclosure on feedback prosociality, then proceed to answer the research question about the impact of feedback prosociality on stress regulation.

The degree of disclosed stress seemed to predict greater perceived feedback prosociality (FtF and online) only during the test taking event (W1 to W2) and only online before learning about test results (W2 to W3). Albeit only partly supported, the hypothesis that the degree of stress may impact the degree of perceived prosociality should not be prematurely discarded, particularly because the pattern of findings may be the result of the specific emotional dynamics of the PSU. The results may be explained by assuming that the test taking event could be experienced as the most stressful of the entire PSU process, because uncertainty or helplessness is at its peak since students' performance ultimately determines whether the student gains a place at a desired career or university. These enhanced stress levels may motivate students to share their emotions with others before and after test taking (Rimé, 2009). In return, their social surroundings may be more inclined to provide supportive feedback to help students during this difficult phase. Given the high level of uncertainty, it can be assumed, that the support given is mostly affective (relative to informational) during wave 1 and 2, compared to the other phases.

Notably, this reinforcement pattern is inversed during the last phase of final results. Here, stress led to less feedback prosociality, both FtF and online. This may be explained by the fact that during the last university selection event, most people may have assumed that the greater part of the stress associated with taking the test had subsided, and therefore may have been less attuned to provide supportive feedback. Moreover, the perceived legitimacy of requesting emotional support may be less compared to the initial test taking phase. Here, requests for social support may indeed have been more informational, as students are faced with a significant number of options (e.g., ten combinations of study programs and universities) to

choose from. We may speculate that the disclosure of stress at this stage is already of high affect intensity, possibly contributing to higher affect in feedback, which in turn is perceived as more prosocial (e.g., empathetic and sympathetic).

Turning to the research question of how FtF and online prosocial support contribute to the down regulation of stress, we find that online communication contributed to downregulate stress mostly during the final event, while FtF did not show any contribution towards this end. This finding is in line with the findings of social sharing of emotions theory (SSE, Rimé, 2009), in that receiving FtF feedback to SSE does not usually end in an immediate alleviation of negative emotions (Rimé, Finkenauer, Luminet, Zech & Philippot, 1998). Furthermore, FtF feedback may have increased stress precisely during test taking because PSU takers, who for a large part still live with their families, may have had to discuss their feelings and concerns with their family or peers in their immediate environment, which may have increased rumination about the test, increasing stress (Rimé et al., 1998). We suggest that the immediacy of FtF interaction intensified the emotion, a notion in line with social sharing theory, which states that sharing emotions reactivates and intensifies affect in the short term (Rimé, 2009). As already surmised, feedback at this stage may have been mostly affective, enhancing the short-term stress intensification.

We suggest that the differential effects of FtF and online feedback during the last selection phase, may be explained by the shift in the content of the feedback towards information. This shift finds grounds on the fact that PSU participants often take part in SNSs support groups to connect with other peers and gain informational support, which may be difficult to obtain in offline contexts. An example of such a group is the closed Facebook PSU group (which counted 17,300 members in 2015 and 128,000 members in 2018), which youngsters recognized as a valuable venue where they could exchange information about PSU learning materials, questions, and support each other with advice and tips about how to face the selection procedure during a qualitative study (Rodríguez-Hidalgo & Alfaro, November 2016). Further, supporting the findings of Trepte et al. (2015), this result suggests that SNSs feedback may be especially suitable to provide informational support. This may be due to the higher accessibility of social media postings (boyd, 2008; Peter & Valkenburg, 2013), which creates opportunities for people with varied backgrounds to provide help. Thus, we argue that the greater downregulation effect of online feedback prosociality in the last episode (in the few days before and after university selection, W5 to W6) may be due to the disclosure of stress online manifesting as more factual uncertainty, answered by informational feedback that is perceived as more prosocial (e.g., helpful for choices and decisions).

One noteworthy result is the relative absence of effects during the test results event (W3

to W4). Surprisingly, neither FtF nor online feedback seem to have affected emotions during the period. We may speculate that youngsters weren't too inclined to share their emotions during test scores, which may be due to shame, an emotion which is not easily shared, even among intimates (Rimé, 2009). It is to be noted that 80% of participants declared to have a negative score difference between their expected scores on wave one with their real self-reported test scores at wave four. This may have brought shame or embarrassment. Another reason could be cultural influences, as many Chilean students expressed that it is simply 'not done' to discuss test scores openly in online environments, because this may easily be interpreted as 'bragging' (Rodríguez-Hidalgo & Alfaro, November, 2016). In sum, considering the interplay between FtF and online feedback, that is to establish their separate or aggregated contribution towards emotion regulation, we find, first, that they seem to operate differently, with online feedback prosociality bringing a greater decrease in stress, instead of FtF prosociality which appeared to increase stress during the test taking phase. Second and relatedly, this result implies that the dynamics of the emotional stressor event may seem to govern the relative effectiveness of online and FtF feedback in the interpersonal regulation of emotion, as marked different effects emerged depending on the particular PSU event.

Overall, even if modest, the observed greater downregulation effect of online feedback prosociality compared to FtF is remarkable for at least two reasons. First, it provides support in an online domain for the stress-buffering hypothesis (Cohen & Wills, 1985), which postulates that social support helps individuals who are going through a stressful period to cope with stress. Second, this finding seems to suggest that online social support, particularly informational support, may be effective in diminishing stress, which may be due to feeling more competent and up-to-date in terms of the knowledge necessary to face an important life decision. This finding also shows how online support may complement FtF support. At least when perceived as well-intended, it can positively exploit the unique affordances of social media, such as asynchronicity, message controllability, accessibility, and persistence (boyd, 2010; Peter & Valkenburg, 2010), which may have propitiated the greater effect of online feedback to downregulate stress even after a period of three weeks (W4 to W5). This finding is in line with previous research which found emotional effects of sharing online after three weeks (Choi & Toma, 2014), although this study did not focus on the nature of important life events. Still, this result adds further empirical evidence to the field of social media and emotion.

The outcomes of the present research need to be compared once more with the six-wave longitudinal study by Utz and Breuer (2017), which showed no effects of SNS use in diminishing stress over a six-month period. We provide three main reasons that could explain

this difference. First, their study did not consider the dynamics of a specific real-life event. Second, specific functions to modify or regulate the stress response, for example receiving prosocial replies, were not investigated. Third, their study did not differentiate within and between-persons relationships. Notably, in our study, emotional fluctuations were markedly within-subjects. This highlights the notion forwarded by Nikkelen et al. (2014) that media effects should be studied at the individual level, rather than at group or population levels (between-persons). It is of relevance to mention that both types of feedback, online and FtF, achieved a high correlation at the between-persons level. This may imply that in terms of perceived prosociality, communication modes may not be too dissimilar. However, in spite of this high between-persons correlation, results still were differentiated at the within-persons level per type of medium, which is remarkable. Namely, quite a different pattern of effects emerged, that of an emotion reinforcement effect of FtF feedback, and a downregulating effect of online feedback, depending on the particular PSU event.

All in all, our results seem to suggest that the emotional effects of SNS may be markedly within-persons, which may inspire research efforts to further assess these relationships. Such new focus could be used to explain, for instance, within-individual effects on other important psychological variables, such as well-being and life-satisfaction, which have received considerable scholarly attention in relationship to SNSs. A suggestion to gain future insights and more specificity in results is to gauge the contribution of more specific variables underlying within-individual effects, such as feedback quantity, relational closeness to the feedback provider, and the congruity of feedback with the emotion shared. Additionally, future work could devise more specific measures of different types of social sharing posts to request social support and further study the effects of the specific content of replies.

Limitations

We note three main limitations. First, the rather broad character of the feedback prosociality measure, with both affective and cognitive elements, hindered this study's ability to differentiate effects of either type of feedback. This may be easily solved by studying effects of more differing types of feedback, for example, anti-social versus prosocial replies, and feedback from socially distant versus closer sources. Second, although the study sample may represent the general Chilean youngster, and Chilean society has become increasingly Westernized, sample generalizability could be improved, for instance by increasing the number of subjects. Third, our findings are based on users' self-reports. Future research could combine multiple methods to capture users' behaviors and effects from online feedback prosociality.

Conclusion

The present study strengthens existing findings regarding the beneficial character of online support by assessing the longitudinal interplay between FtF and online feedback in downregulating emotions over time. Results suggest that the informational character of online feedback prosociality may exert a downregulating effect, albeit modest, on stress. Further, the emotional outcomes of receiving online support can be experienced both in the short and long term, depending on the emotional context individuals find themselves in.