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Don't Stress Me Now: Assessing the Regulatory Impact of Face-to-Face and Online Feedback Prosociality on Stress During an Important Life Event

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This study investigates the interplay between online and face-to-face (FtF) feedback on stress during an important life event. We present data on a two-month, six-wave longitudinal study of 468 Chilean adolescents across three important stages of a competitive national university selection test (Prueba de Selección Universitaria [PSU]) to assess longitudinal and reciprocal relationships. Random intercept cross-lagged panel models (RI-CLPM) showed that online feedback had a small effect in decreasing stress during the three short-termed waves, before and after the three main events of the test: test taking, test scores, and final selection. No intrapersonal effects were found for FtF feedback on stress, and vice versa. At the interpersonal level, only feedback variables were related. Results suggest that prosocial replies on social media may slightly help to downregulate stress from important life events at the intrapersonal level, an effect which appears to be short-lived (e.g., only a few days), rather than long-lived (e.g., three weeks).

Keywords: Feedback, Face-to-Face (FtF), Online vs. Offline, Channel Complementarity, Regulation

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During a stressful life event, people often seek support from others (Cohen & Wills, 1985). In an online context, while the beneficial effects of supportive messages have generally found support in the

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literature—for instance, in alleviating feelings of stress after losing one's job (Burke & Kraut, 2013)—research on this topic is not unequivocal. One previous six-wave longitudinal study found no long-term relationships between online social support and stress; however, that study did not differentiate intrapersonal or interpersonal effects (Utz & Breuer, 2017). Relevantly, online social support has been found more effective to provide informational rather than emotional support (Trepte, Dienlin, & Reinecke, 2015), while face-to-face (FtF) communication is assumed to be the gold standard and a better medium than online communication in providing support to others (Sundar, 2008).

To increase our understanding of the dynamics between online and offline support, then, we analyze the ability of online and FtF support to decrease stress. Following emotion regulation theory (Gross, 2013), we focus on the effect of feedback prosociality, or the degree to which feedback is perceived as helpful and beneficial, across six measurements over the natural course of a real-life event: the *Prueba de Selección Universitaria* (PSU). As Chile's university admission's test, the PSU—similar to the U.S.'s Scholastic Aptitude Test (SAT)—is a case study par excellence of a natural, emotionally dynamic life stressor that develops across different phases, akin to other stressful life events such as medical examinations or losing one's job (Folkman & Lazarus, 1985). Furthermore, Chile represents a good case study opportunity for comparing online and FtF support, due to high Internet penetration (88% of homes have Internet access) and social media use (92% are active Internet users, Raby, 2018), comparable to, e.g., the United States.

To assess the proposed relationships, and in line with recent media effects studies which suggest that causal effects occur within, rather than across, individuals (Nikkelen, Valkenburg, Huizinga, & Bushman, 2014; Voelkle, Brose, Schmiedek, & Lindenberger, 2014), we employ the random intercept cross-lagged panel model (RI-CLPM, Hamaker, Kuiper, & Grasman, 2015). This model disentangles intrapersonal and interpersonal relationships regarding the effects of individual changes in feedback prosociality on individual changes in emotion and viceversa (as opposed to the more global between-person differences). Furthermore, we assess such changes a few days and weeks after receiving FtF and online support for different stages of the major life event. In contrast to earlier studies that employed short-time lags of a few days to weeks (e.g., Bayer, Ellison, Schoenebeck, Brady, & Falk, 2018; Choi & Toma, 2014), or longer lags of six months (Utz & Breuer, 2017), we analyse changes after a few days, and again after three weeks. This contributes to assess the best time-lag to measure effects from social media use (Dormann & Griffin, 2015) and thus add to emergent literature focusing on time and contextual effects of social media use.

The present study thus: (a) clarifies the effects of online and FtF feedback on the regulation of stress over time, (b) examines longitudinal intrapersonal and interpersonal processes, to help disentangle whether differences should be attributed to stable individual differences, or to changes in individual feedback, and (c) proposes an approach that focuses on the emotional nature of important life events. Ultimately, understanding the dynamics of offline and online support may contribute to helping young people undergoing a difficult life event, and potentially improve their mental health (Lazarus, 1996).

The effects of social support on stress

Stress is defined as a physical and psychological reaction that occurs when a person appraises a situation as: (a) threatening, (b) personally significant, and (c) exceeding their resources to cope with or face it (Lazarus, 1996). Stress, with its well-documented health-related outcomes from increased levels of physiological arousal and negative affect (Folkman, 2013), may be triggered by any of several life

events, such as academic or work tests, romantic unions/breakups, and health conditions such as sickness. Importantly, these events affect emotional well-being in both the short and long term (Luhmann, Hofmann, Eid, & Lucas, 2012). Since academic examinations elicit stress and need for coping (Folkman & Lazarus, 1985), this study focuses on the PSU as an emotional stimulus as trigger for stress.

In their seminal work, Cohen and Wills (1985) proposed that social support may reduce the associations between life stressors and negative emotions, such as stress and anxiety. Shumaker & 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). Expanding on this, Rimé (2009) proposed the social sharing of emotions theory, which suggests that events eliciting strong emotions trigger people to share these events with others in an attempt to regulate this emotion. In our case, this exchange is a process of one person disclosing or sharing a negative emotion, followed by feedback which may buffer or reduce the initial negative emotion in the sharer.

Although the buffering effect of social support on stress has been studied in the literature on FtF communication, the question of whether online communication can buffer negative emotions by means of supportive replies requires further longitudinal examination. Indeed, apart from one notable exception (Utz & Breuer, 2017), research on the relationship between stress and social media support has mostly been cross-sectional. For instance, Zhang (2017) found that self-disclosing on Facebook moderated the relationship between stressful life events and mental health. Further, Nabi, Prestin, and So (2013) found that structural aspects of support, such as the number of Facebook friends, were associated with reduced stress. Our aim is to provide further information through a longitudinal design to explore this proposed effect by looking into how social media and FtF support may buffer stress by means of feedback prosociality in both the short- and long-term.

Prosocial feedback and stress regulation

Social support has been conceptualized as both perceived social support, which entails a person's belief of having others to turn to for support; and as enacted social support, which refers to the actual support behaviors or acts that individuals receive (Barrera, Sandler, & Ramsey, 1981; Dunkel-Schetter and Brooks, 2009). Although useful, these distinctions still have avenues to address. First, although enacted social support is meant to help the receiver, it may be perceived as inadequate, e.g., when feedback does not meet the receiver's expectations. Second, perceived support is related to people's beliefs of the availability of social support, not to their perceptions of enacted support. We therefore incorporate assessments of both perceived helpfulness of feedback and perceived prosociality of feedback in our study.

Prosocial behavior is defined as "voluntary behavior that benefits others or promotes harmonious relations with others" (Dovidio, Piliavin, Schroeder, & Penner, 2006). Indeed, receiving online prosocial behavior on social media has been found to enhance people's tendency to act prosocially online (Erreygers, Vandebosch, Vranjes, Baillien, & De Witte, 2018). Prosocial feedback may occur as a reaction to an emotional disclosure, particularly in online environments. To that end, a representative survey sample by Trepte, Masur & Scharkow (2018) found that self-disclosure through instant messenger predicted the amount of received social support six months later.

Prosocial support can diminish the negative intensity of emotions, allowing users to regulate or manage them. The intensity of an emotional experience and its disclosure affect that support and

subsequent emotion regulation. Generally, higher emotional intensities of a disclosed personal experience are more likely to trigger a desire to provide social support to the discloser (Rimé, 2007; 2009) and emotion regulation, understood broadly as the process to maintain, increase, or decrease an emotion (Gross, 2013). Traditionally, emotional regulation through social support has been seen as a strictly interpersonal process (Rimé, 2007; 2009). We argue, however, that perceptions of prosocial support help individuals manage the felt intensity of their stress both inter- and intrapersonally (Zaki & Williams, 2013).

Assessing within and between person relationships

Although several studies have assessed the impact of receiving social support through social media (Meng, Martinez, Holmstrom, Chung, & Cox, 2017), to our knowledge, none have found significant effects on between person relationships (e.g., Utz & Breuer, 2017). However, these null effects may be due to the fact that relationships were investigated between persons rather than within persons. The need to assess whether the emotional impact of online support occurs at the intrapersonal or interpersonal level is evident. For example, it may be that trait-like, time-invariant characteristics across individuals explain how some groups get better and more adequate support (such as groups of higher socioeconomic status and/or social capital); and that these trait-like characteristics may further account for differences in how this support impacts emotions; or indeed if variations in individual feedback received by one person, compared to the expected feedback scores of that same person over time, will ultimately account for any effects.

In estimating and separating interpersonal and intrapersonal effects, the RI-CLPM is a state-of-the-art analysis technique that has been proposed as a better alternative to traditional cross-lagged models, which do not separate within from between person variance (Hamaker et al., 2015). This model is especially pertinent given the evidence that media effects are not only reciprocal (Valkenburg & Piotrowski, 2017), but also occur at the within, rather than at the between person, level. For instance, recent media studies on online prosocial behavior have found within person effects for both performing and receiving online prosocial behavior over time, but no effects at the between person level (Erreygers et al., 2018). To isolate any potential effects, the study will also compare interpersonal and intrapersonal effects for FtF support.

Receiving FtF support

While true that social support has expanded to mediated communication on social media (Rodríguez-Hidalgo, Tan, & Verlegh, 2015), FtF interactions have traditionally taken this role. FtF, recognized as high in warmth, with rich haptic, audio-visual, and kinesic cues, has shown to be effective in providing social support, especially in emotionally ambiguous and important situations (Daft & Lengel, 1986). Moreover, FtF support is often provided by relationally close others (such as close kin and best friends), which may enhance the effectiveness because of increased awareness of best methods to support sharers (Rimé, 2009).

However, is FtF communication necessarily the best means of social support? Studies assessing the efficacy of FtF interactions have found that sharing emotions may increase the initial intensity felt (Rimé, 2009), and that the feedback provided does not necessarily decrease the impact of the emotional experience in the long term (Nils & Rimé, 2012; Rimé, Finkenauer, Luminet, Zech, & Philippot, 1998). These findings may to some extent be attributable to the high synchronicity and immediacy of

FtF interaction—its spontaneous nature favors intuitive, primal reactions, in contrast with potentially more helpful, thoughtful, or well-considered responses to the receiver. Second, FtF communication is guided by a certain range of social and cultural rules due to which people are more prone to provide empathic or affective support first (Hochschild, 2002; Rimé, 2009). Third, as equally found by Rimé (2009), despite this tendency for people to provide empathic or affective support first, more informative or cognitive replies are better at diminishing negative impacts of emotional experience over the long-term. Therefore, should informative or rational replies provide better long-term outcomes, it may not be conducive to rely solely on FtF feedback—in the midst of an intense emotional event, the substantial cognitive resources required for immediate acceptance of feedback may not be available. For the most effective support in managing negative emotions, alternative feedback mechanisms should thus be more closely examined.

Receiving support online

The earliest forays into online communication research tended to judge it a cold, slow medium for communicating, exchanging emotions, or providing social support due to its apparent lack of synchronicity and social cues (Daft & Lengel, 1986). More recently, however, the literature has adopted a more optimistic view of online communication, along with new understandings of what are known as "affordances" (Boyd, 2008; Walther & Parks, 2002). Rooted in ecological psychology, affordances are defined as the properties of an environment that enable specific actions (Gibson, 1979), and have later been applied to technology (Norman, 1999). Ontologically, affordances emerge from reiterated, reciprocal relations between a technology, an artefact and an actor (Faraj & Azad, 2012). Recently, the theoretical and practical boundaries of affordances have been dealt with by communication scholars (e.g., Evans, Pierce, Vitak, & Treem, 2016). We posit that this novel framework may be applied to compare communication and support outcomes between online and FtF social support. Building on Boyd (2010) and Peter & Valkenburg (2013), we base this comparison on four previously established types of affordances.

The first affordance is that of visual anonymity in social media communication over FtF. Even to a lesser degree, though one may choose to display a personal photo as a profile picture, physical movement and facial expressions still remain hidden. The visual anonymity affordance may thus disinhibit social media communication as compared to FtF interactions (Joinson, 2001; Tidwell & Walther, 2002). This may facilitate greater and more detailed social disclosure of emotional experience ([SSE] Rodríguez-Hidalgo et al., 2015), as well as more disinhibited expression of support from subsequent interlocutors. Further, this disinhibited communication via social media may break with social norms of empathic replies and yield more rational responses than would FtF. Notwithstanding, it does bear mention that anonymity may embolden people to provide antisocial or harmful feedback, who need not fear consequences given the concealment of their identity.

As a counterweight to potential negative feedback, the second social media affordance, asynchronicity, allows both initiator and responder greater temporal disengagement when sharing and replying on social media. The asynchronicity inherent to social media makes it especially suitable for instrumental and emotional support—ample opportunity for reflection before communicating increases controllability of messages (Walther & Parks, 2002). The combination of immediacy, abated through the affordance of asynchronicity, augments the previously mentioned disinhibition of socially-expected empathic responses, through the affordance of visual anonymity; this increases the likelihood that recipients of emotional disclosures craft more cognitive replies over social media. In contrast, FtF communication may not provide cognitive support as quickly as online feedback; moreover, its immediacy and social expectations (i.e., feeling obligated to express gratitude immediately) may hinder mental processing of feedback.

A third affordance of social media is accessibility, where messages from individuals reach broader social circles. Users may easily share one message with a large and diverse group of good friends, family members, acquaintances, classmates, etc., regardless of geographical barriers. In turn, more numerous recipients of a message increase the variety of perspectives offered by replies (Peter & Valkenburg, 2013; Trepte et al., 2015). Accessibility may also extend beyond the initial friend network. For instance, a request for particularly specialized advice (e.g., emotionally coping with a rare disease) can be re-shared to other networks and increase the chances of receiving emotionally suitable and informed feedback. As a caveat, and in spite of these benefits, increased accessibility from public social media posts may also result in disclosure being seen by unwanted audiences or met with aggressive reactions or bullying.

Finally, the fourth affordance is that of retrievability. Online interactions are recorded by platforms and are thus more persistent than FtF communication (Boyd, 2010; Peter & Valkenburg, 2013). Since cognitive replies to emotional situations usually require more time to be assimilated (Rimé, 2009), poor recall of FtF communication may hinder its efficacy. In contrast, the affordance of retrievability allows any content online to be revisited and enhance long term outcomes.

The research context: the PSU and its main phases

In Chile, the PSU is a competitive standardized national examination taken annually by recent high school graduates. The scores from this test are a significant contributing factor to the undergraduate programs future students may apply to across a consortium of 41 state and privately-owned Chilean universities. Though fluctuating between 460 and 822 points, the national average usually hovers around 500 points ($SD = 110$; Fajnzylber, Lara, & Tomás León, 2018). University programs impose limits on class size and admit students on a highest score, first-served basis; as a result, it is not uncommon for minimal score differences to bar entry to more competitive programs. As stressful as the PSU may itself be for test takers, they must additionally face duress from external factors like university quotas, peer performance, and total demand for a given undergraduate program. The pressure to do well on the PSU is illustrated by the 2017 cohort of test takers: Chilean universities admitted only 36% (295,365; Ortiz, 2017). The PSU process may be divided into three main stages of three weeks each: taking the test, receiving test scores, and receiving admittance to a university/study program. Figure 1, in the supplementary materials, shows a visual display of PSU stages with this study's waves of data collection.

The anxiety felt before and during these two months is akin to that of major life events, such as marriage/divorce (Folkman & Lazarus, 1985). The initial anticipatory stage in preparing for the exam involves ambiguous conditions, where test questions are unknown and may cover a broad range of

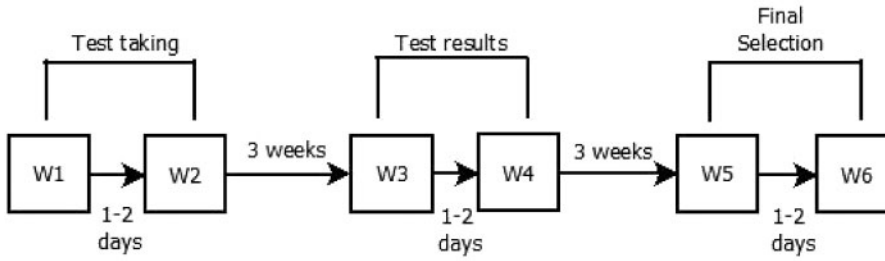

Figure 1 Timeline of the three main PSU events and data collection waves.

questions. In the second stage, students must wait to receive scores that will allow them to apply to a set of 10 preferred programs and universities. Finally, and impacting their future livelihood, students are informed in the third stage where and what they will study.[1] In short, affective responses may persist across phases, as emotions emerge in anticipation, during, and from subsequent evaluations of events (Ortony, Clore, & Collins, 1990).

The present study

In this study, we examine the cross-lagged relationships between online and FtF feedback prosociality and stress experienced in individuals undergoing a significant life event. The PSU and its well-defined stages of emotional stimuli are a natural setting to study stressful triggers. To this end, and rather than relying on more structural aspects (e.g., number of friends), we focus on individual perceptions of prosociality to assess the usefulness of supportive replies. Moreover, because the current body of research on social support in social media and its processes (Meng et al., 2017) has few studies on the intrapersonal processes, the research design considers both intrapersonal and interpersonal relationships. We therefore formulate the following research question:

> RQ1: What are the longitudinal intrapersonal effects of perceived prosociality from: (a) online, and (b) FtF feedback on stress depending on the specific PSU phase?

Second, we consider feedback effects on individuals' emotions and additionally account for any reciprocal effects that may occur; that is, if the intensity of shared emotions affect the feedback provided. This because in online environments, there is evidence that beneficial feedback occurs in response to requests of social support (Ballantine & Stephenson, 2011). Likewise, in FtF communication, people under greater distress are more willing to provide helpful support (Barrera, Sandler, & Ramsey, 1981). Since the PSU is a nationwide event, PSU takers may not only be more prone to request support in coping with strong emotions (Rimé, 2009), but also to provide support to others undergoing the same, or another, stressful life event. Next, there is general agreement in the literature that media effects tend to be reciprocal (Valkenburg & Piotrowski, 2017), and so we study the inverse relationship. Third and lastly, and as explained earlier, it is also necessary to separate intrapersonal effects from group or interpersonal variances. Therefore, we ask:

> RQ2: What are the longitudinal intrapersonal effects of stress on prosociality in: (a) online vs. FtF feedback, (b) depending on the specific phase of the PSU test?

> RQ3: In how far are online feedback prosociality, FtF feedback prosociality and stress related interpersonally?

Method

Sample

A universe of 499 participants was recruited for the study by a professional data collection institution affiliated with one of Chile's main universities. Of a total of six waves, the first wave of data collection received complete responses from 94.3% of participants (470). Complete response rates for subsequent waves were 418, 355, 347, 311, and 290. Sixty-three percent of participants identified as female. Mean age of participants was 18-years-old, and 82% of participants declared their age between 18- and 19-years-old. Two cases were excluded from the sample due to being outside the age range of

interest (31- and 47-years-old). The final sample after selection criteria totaled 468 participants. Of participant social media usage, the most frequent was Facebook (72%; one to four hours daily), followed by WhatsApp (54%; one to four hours daily). Participant responses indicated little usage of email and blogs.

Mean participant high school grade point average (GPA) was 6.0 (grades in Chile are from 0 to 7). Seventy-four percent (348) indicated having attended specialized preparation courses ("pre-university school"). Forty-nine percent (228) indicated this was their first time taking the PSU; 208, for the second time; 29, for the third; and seven, the fourth. Responses to exit surveys (wave 6) resulted in 56% (160) of students indicating that they were admitted to the university and career of their choice; 54% (157), to their preferred program only; and 65% (187), to their preferred university only. These percentages overlap where preselected students had more than one choice for their preferred combination of career and university.

Procedure

A local professional data collection organization administered surveys via an online web platform and was also tasked with managing incentives. The first wave of data collection began at the end of November 2015; and the sixth wave, at the end of January 2016.[2] Participants received a survey link via email messages sent by the data collection entity. Incentives were either an electronic ticket to the cinema for every two completed waves; or the equivalent in money via an electronic bank transfer. Participants who answered all six waves received an additional ticket (or equivalent sum).

Measures

Member of Facebook PSU support group

A single item on the first wave enquired whether participants belonged to any Facebook PSU support group. The question read "Are you a member of a Facebook support group for students that take the PSU?" Answer options were "yes" (341, 73.8%); "no" (132, 28.2%) and "don't want to say/don't know" (1, .21%).

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 recall the last time you posted how you felt 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 behaviors regarding 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 ($SD = 1.60$); and 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).

Receiving feedback

For descriptive purposes, and to acknowledge the possibility of participants not receiving feedback after posting, the following instructions were provided: "Please think back to your emotional post about the PSU"; followed by: "Did you receive feedback to your post about the PSU?" Answer categories were "*yes*" and "*no*." Participants who selected "no" from the online feedback block questions were

excluded from survey data at each respective wave and were marked as "missing." Participants who selected "*yes*" at each respective wave (percentages calculated per total of included respondents) were: 419 (90%, W1); 368 (88%, W2); 187 (52%, W3); 222 (64%, W4); 191 (64%, W5); 185 (86%, W6).

Receiving FtF feedback

For descriptive purposes and to assess whether participants received FtF feedback, the same instruction was given: "Please think back to the last time you shared emotions talking with someone about the PSU." To avoid participant indications of FtF interaction during the PSU event itself (for instance, asking for directions to get to a particular PSU test room), the question enquired after meaningful conversations sharing emotions: "Did you receive feedback to this meaningful conversation about the PSU?" Participants who selected "*yes*" per wave (percentages calculated as total included respondents per wave) were: 419 (90%, W1); 367 (88%, W2); 279 (76%, W3); 290 (84%, W4); 224 (74.4%, W5); and 217 (72%, W6). Similar to online feedback, participants who indicated having not received feedback were excluded from FtF feedback question blocks for each respective wave and were marked as "missing."

Stress

Questions about perceived PSU-related stress were tailored to test phases and included items on common emotions elicited during academic exams, such as feeling nervous, stressed, worried, and pressured (Folkman & Lazarus, 1985). Using one emotion as an example, items followed the following format: "How worried do you feel about taking the PSU tomorrow?" (W1); "How worried do you feel about having taken the PSU yesterday?" (W2); "How worried do you feel about finding out about your score results tomorrow?" (W3); "How worried do you feel about having found out about your score yesterday?" (W4); "How worried do you feel about finding out about your selection results tomorrow?" (W5); and "How worried do you feel about having learned about your selection results yesterday?" (W6). The order of items for each emotion was randomized across waves to not prime participants.[3] Respondents indicated their responses by dragging a slider from 0 (*not at all*) to 100 (*extremely*). The configural and metric invariance of stress and feedback variables are shown in the data analysis section, under measurement invariance.

Online feedback prosociality

Items describing beneficial feedback according to social sharing theory (Rimé, 2009) were developed to measure feedback prosociality. For online feedback prosociality, participants were instructed to think about the feedback they received from others to their posts about the PSU and to drag a response slider from 0 (*not at all*) and 100 (*extremely*), where the middle value represented neutral affect. Questions were: "To what extent did you feel supported by this feedback?"; "To what extent did you feel that the person who provided this feedback listened to you?"; and "to what extent did this feedback provide you with good advice?"

Face-to-Face feedback prosociality

The measure for FtF feedback prosociality was analogous, with a slight variation in the instruction: "Please remember the last meaningful interaction that you have had talking face to face with someone about the PSU." The questions and answer sliders were equal to the measure of online feedback prosociality.

Data analyses

Measurement invariance

To ensure that the underlying constructs could be reliably compared across time, we first tested for measurement invariance of the main variables (stress, online, and FtF feedback prosociality) according to the procedure outlined by Hamaker (2018). To establish that the construct had a similar meaning to participants per wave, we established configural invariance by running a confirmatory factor analysis for all variables across the six waves, without constraining the factor loadings. The CFA showed a satisfactory fit $\boldsymbol{x^2 =}$ 4407.144; $df = 2331$; $x^2/df = 1.89$; RMSEA = .043 (90%CI: .042, .045); CFI = .938; SRMR = .040.

However, establishing configural invariance in itself is not sufficient; this does not ensure consistent construct meaning over time, which is a possible source of error (Kühne, 2013). Therefore, metric invariance was tested by constraining factor loadings to be invariant over time (Hamaker, 2018). This CFA showed satisfactory fit $\boldsymbol{x^2 =}$ 4659.993; $df = 2376$; $x^2/df = 1.96$; RMSEA = .045 (90%CI: .043, .047); CFI = .932; SRMR = .040. Regarding model fit comparisons, although we report the Chi-Square index, we rely on the specific cut-off values of alternative fit indices provided by Chen (2007); the former is especially sensitive to different sample sizes, as we saw in the respective waves (Bollen & Long, 1993). Between the two models, differences in fit are below the threshold criteria suggested by Chen (2007, *p.* 501): ΔCFI = $-.006$ ($\leq -.005$); ΔRMSEA = .002 ($\geq .010$); ΔSRMR = .00 ($\geq .025$). Therefore, metric invariance of our measurement model can be assumed.

Random intercept cross-lagged panel model

After establishing invariance, hypotheses were tested with the RI-CLPM (Hamaker et al., 2015) with full information maximum likelihood estimation (FIML). Missing values were left blank. In common cross-lagged models, variance is aggregated per group or between subjects, and does not distinguish between interpersonal or intrapersonal effects (Curran & Bauer, 2011). The RI-CLPM (Figure 2), on the other hand, includes changes over time in intrapersonal measurements; and also stable interpersonal differences over time. 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 .251, indicating that 25.1% of the variance was explained by differences between participants, while the remaining 74.9% was explained by changes within a participant (i.e., intrapersonal variance). The ICC for stress was .309, indicating that 30.9% of the variance was explained by differences between participants, while 69.1% of the variance was explained by differences within subjects. The ICC for FtF feedback prosociality was .24, indicating that 24% of the variance was explained by differences between participants, while the remaining 76% was explained by differences within participants. These outcomes are illustrative of the need to disentangle intrapersonal and interpersonal effects.

Our model specification followed Hamaker et al. (2015). We created latent factors by regressing the observed scores for online feedback prosociality, stress, and FtF feedback prosociality on their own factors, with loadings constrained to one. The seven latent factors per variable (six within person wave specific variances, plus one random intercept for the general between person variance) resulted in 21 factors. Next, three random intercepts were created to capture the interpersonal variance for online feedback prosociality, stress, and FtF feedback prosociality. Observed scores were used as indicators of random intercept factors, and each factor loading was constrained to one. The correlation between the random intercept factors reflects the extent to which stable between person differences in

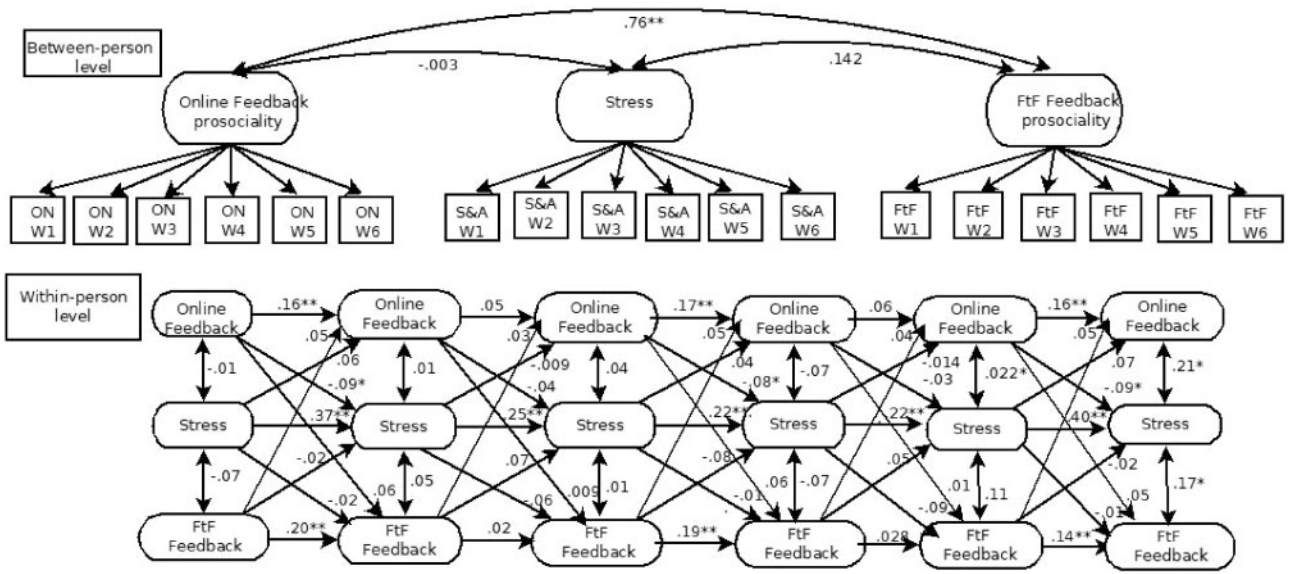

Figure 2 Random intercept cross-lagged panel model (RI-CLPM, Hamaker et al., 2015) showing relationships among Online Prosocial Feedback (OPF), stress, and FtF prosocial feedback (FtF) across six waves. The model differentiates intrapersonal and interpersonal variance. Path coefficients presented in standardized form. Ovals represent latent constructs. Error terms and their correlations, as well as intrapersonal correlations between OPF and FtF, were omitted for space concerns.
*$p < .05$; **$p < .001$.

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 determine the extent of subjective emotion score deviations from predicted scores for online feedback prosociality and FtF feedback prosociality; and vice versa. Within each wave, the residuals (or error terms) of each variable were correlated. Because 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

Tables 1A–1C in the Online Appendix show the internal consistency, composite reliability, and factorial validity data for stress, online prosociality, and FtF prosociality variables, respectively. The RI-CLPM model (see Figure 2) showed good fit ($x^2 = 211.16$, $df = 112$; $x^2/df = 1.88$, CFI = .93, RMSEA = .043, 90% CI = [.03, .05], SRMR = .08). Due to space considerations, all mentions of feedback (both FtF and online) henceforth refer to prosociality. Tables 2A & 2B in the Online Appendix present the zero-order correlations between stress and online feedback, and between stress and FtF feedback, respectively.

Results for our first research question on the longitudinal intrapersonal effects of: (a) online, and (b) FtF feedback on PSU phase related stress are as follows: (a) Online feedback had a small, but significant, negative effect on stress that lasted for a few days, and occurred for all three phases: test taking (W1 to W2); test results (W3 to W4); and final university selection (W5 to W6). Specifically, online feedback significantly, though weakly, reduced stress: during the test taking phase ($\beta = -.09$, 95% CI [−0.19, −0.3], $B = -.06$, $SE = .04$, $p = .02$); in the test results phase ($\beta = -.08$, 95% CI [−.14, −.02], $B = -.06$, $SE = .09$, $p = .02$); and in the selection phase ($\beta = -.09$, 95% CI [−.15, −.02], $B = -.06$, $SE = .03$, $p = .02$). As such, on the day before and after each PSU phase, online feedback modestly helped in decreasing stress. Furthermore, results revealed that online feedback had a non-significant effect on stress during the longer time periods between test taking and test results (W2 to W3) and between test results and final selection (W4 to W5): Respectively, ($\beta = -.04$, 95% CI [−.14., .06], $B = -.03$, $SE = .06$, $p = .50$), and ($\beta = -.03$, 95% CI [−.10, .04], $B = -.03$, $SE = .04$, $p = .50$).

Results for (b) FtF feedback effects revealed no significant effects of FtF feedback on stress. Figure 2 shows the shorter-term effects for: test taking (W1 to W2), test results (W3 to W4), and final university selection (W5 to W6). Specifically, FtF feedback had no significant effects on stress: during test taking ($\beta = -.02$, 95% CI: [−.09, .04], $B = -.02$, $SE = .05$, $p = .74$); during the test phase ($\beta = -.08$, 95% CI: [−.08, .04], $B = -.02$, $SE = .05$, $p = .74$); or the university selection phase ($\beta = -.02$, 95% CI [−.09, .04], $B = -.02$, $SE = .04$, $p = .74$). Likewise, no significant effects were found between FtF feedback and stress over longer time frames (W2 to W3, and W4 to W5), respectively: ($\beta = .07$, 95% CI [.01, .14], $B = .07$, $SE = .06$, $p = .13$); and ($\beta = .05$, 95% CI [.01, .11], $B = .05$, $SE = .03$, $p = .08$).

Results for our second research question regarding the longitudinal intrapersonal effects of stress on prosociality in: (a) online, and (b) FtF feedback for each PSU test phase are as follows: (a) There was a non-significant effect of stress on online feedback that lasted a few days, for all three phases of the PSU: test taking (W1 to W2); test results (W3 to W4); and final university selection (W5 to W6).

Table 1A Indices of Internal Consistency, Composite Reliability, and Factorial Validity for Stress

	Mean (SD)	Skewness	Kurtosis	Min. Value	Max. Value	Cronbach's Alpha	McDonald's Omega	Average Variance Extracted
Stress T1	58.25 (29.95)	−.42	−.81	0	100	.91	.91	.79
Stress T2	60.66 (25.50)	−.60	−.23	0	100	.86	.86	.71
Stress T3	61.63 (24.23)	−.63	.011	0	100	.83	.83	.66
Stress T4	41.70 (29.45)	.21	−1.04	0	100	.91	.91	.78
Stress T5	46.33 (32.42)	−.02	−1.30	0	100	.92	.92	.81
Stress T6	40.12 (23.09)	.17	−.39	0	100	.71	.71	.54

Table 1B Indices of Internal Consistency, Composite Reliability, and Factorial Validity for Online Feedback

	Mean (SD)	Skewness	Kurtosis	Min. Value	Max. Value	Cronbach's Alpha	McDonald's Omega	Average Variance Extracted
Online feedback T1	65.11 (34.41)	−1.05	−.36	0	100	.96	.96	.90
Online feedback T2	64.94 (33.97)	−1.15	−.24	0	100	.97	.97	.92
Online feedback T3	38.69 (39.54)	.18	−1.74	0	100	.98	.98	.95
Online feedback T4	47.60 (38.96)	−.19	−1.65	0	100	.97	.97	.92
Online feedback T5	47.84 (35.60)	−.34	−1.44	0	100	.97	.97	.93
Online feedback T6	47.86 (38.94)	−.22	−1.64	0	100	.97	.97	.91

Table 1C Indices of Internal Consistency, Composite Reliability, and Factorial Validity for FtF Feedback

	Mean (SD)	Skewness	Kurtosis	Min. Value	Max. Value	Cronbach's Alpha	McDonald's Omega	Average Variance Extracted
FtF feedback T1	73.71 (31.87)	−1.43	.82	.00	100	.96	.96	.90
FtF feedback T2	71.69 (30.15)	−1.42	1.02	.00	100	.97	.97	.91
FtF feedback T3	59.69 (35.77)	−.77	−.88	.00	100	.96	.96	.93
FtF feedback T4	65.76 (34.42)	−.99	−.39	.00	100	.98	.98	.94
FtF feedback T5	59.51 (29.75)	−.93	−.06	.00	100	.95	.95	.86
FtF feedback T6	59.87 (37.66)	−.71	−1.08	.00	100	.98	.98	.95

Table 2A Zero-Order Correlations Between Stress and Online Feedback

	1	2	3	4	5	6	7	8	9	10	11	12
Stress T1	1											
Stress T2	.66**	1										
Stress T3	.49**	.47**	1									
Stress T4	.26**	.23**	.41**	1								
Stress T5	.24**	.18**	.34**	.41**	1							
Stress T6	.21**	.18**	.27**	.32**	.36**	1						
Online feedback T1	.05	−.02	.02	.09	.03	.01	1					
Online feedback T2	.06	.11*	.06	−.03	−.02	.04	.27**	1				
Online feedback T3	.05	.08	.14*	.06	.11	.08	.28**	.25**	1			
Online feedback T4	.01	.12*	.11	−.03	−.03	−.01	.26**	.24**	.40**	1		
Online feedback T5	.14*	.17*	.16**	.11	.24**	−.01	.14**	.18**	.41**	.36**	1	
Online feedback T6	−.06	.02	.03	−.01	.15*	.13*	.22**	.14**	.41**	.41**	.51**	1

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

Table 2B Zero-Order Correlations Between Stress and FtF Feedback

	1	2	3	4	5	6	7	8	9	10	11	12
Stress T1	1											
Stress T2	.66**	1										
Stress T3	.49**	.47**	1									
Stress T4	.26**	.23**	.41*	1								
Stress T5	.24**	.18**	.34**	.41**	1							
Stress T6	.21**	.18**	.27**	.32**	.36**	1						
FtF feedback T1	.01	−.02	−.10	.07	.01	.07	1					
FtF feedback T2	.02	.10*	−.01	.03	.03	.01	.31**	1				
FtF feedback T3	−.06	−.05*	−.00	−.05	.03	−.04	.18**	.35**	1			
FtF feedback T4	−.03	−.014	−.07	−.06	−.09	−.06	.13*	.32**	.45*	1		
FtF feedback T5	−.02	.042	−.08	−.06	−.04	−.05	.10	.19**	.21**	.12*	1	
FtF feedback T6	−.01	.063	−.08	−.02	−.02	.09	.075	.23**	.30**	.23**	.36**	1

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

Specifically, stress did not significantly affect online prosociality: during test taking ($\beta = .06$, 95% CI [−.03, .14], $B = .07$, $SE = .05$, $p = .15$); during test results ($\beta = .04$, 95% CI [.01, .10], $B = .07$, $SE = .05$, $p = .15$); or during the university selection phase ($\beta = .07$, 95% CI [−.03, .12], $B = .07$; $SE = .05$; $p = .15$).

Further, no significant effects of stress were found on (b) FtF feedback. Figure 2 shows the lack of short-term effects during test taking (W1 to W2), test results (W3 to W4), or university selection phase (W5 to W6). Specifically, stress did not significantly affect FtF feedback: during test taking

($\beta = -.02$, 95% CI [−.10, .07], $B = -.02$ $SE = .05$; $p = .74$); after test results ($\beta = -.01$, 95% CI [−.07, .05], $B = -.02$, $SE = .05$; $p = .74$); or university selection ($\beta = -.01$, 95% CI [−.01; .07], $B = -.02$; $SE = .05$; $p = .74$). Likewise, stress did not significantly affect either type of feedback over the longer time frames (W2 to W3, and W4 to W5): respectively, for online feedback ($\beta = -.009$, 95% CI [−.08, .07], $B = -.002$, $SE = .070$, $p = .82$) and ($\beta = -.01$, 95% CI [−.12, .10], $B = -.02$; $SE = .07$; $p = .82$); and for FtF feedback ($\beta = -.06$; 95% CI [−.13, .01], $B = -.09$; $SE = .06$; $p = .13$) and ($\beta = -.09$, 95% CI [−.02, .01], $B = -.09$; $SE = .06$; $p = .13$).

Results for our third research question regarding interpersonal correlations among online feedback prosociality, stress, and FtF feedback prosociality are as follows. Interpersonal correlations revealed a non-significant relationship between online feedback and stress ($r = -.003$; 95% CI [−.16, .16], $SE = .098$; $p = .98$); and between stress and FtF feedback ($r = .142$; 95% CI [−.02, .31], $SE = .095$, $p = .13$). However; a significant correlation was found between online and FtF feedback ($r = .764$, 95% CI [.66, .85], $SE = .057$; $p < .001$) at the interpersonal level. This means that, across waves, participants who perceived one type of feedback as prosocial also tended to report the other type of feedback to be beneficial.

Discussion

This article explored the interplay between online and FtF feedback prosociality (i.e., users' perceptions of beneficial feedback) with the regulation of stress over time in the context of a common important life event, from six waves of data collection over two months. Employing an advanced methodological approach, the study sheds light on the longitudinal interpersonal and intrapersonal dynamics of feedback prosociality during a natural emotional stimulus, a competitive academic exam. Furthermore, we studied the potential of perceived feedback prosociality for the downregulation of stress related emotions in the process.

This study is the first to employ RI-CLPM for a natural longitudinal stressor to differentiate interpersonal and intrapersonal feedback effects. A small, but significant, intrapersonal effect was found for online prosociality in momentarily reducing stress during the short time lags before and after the three main PSU events (test taking, test scores, and selection). This result is in line with the literature on social media effects, which generally reports moderate to weak effects (Huang, 2017). Further, this result shows that online feedback slightly helped to decrease stress levels during the days before and after the main events of the PSU (test taking, test scores and final selection). These results may be due to more salient emotions in the hours before and after the test, in anticipation and retrospection of an important event (Ortony et al., 1990). Students may feel nervous immediately before taking the test due to performance pressures; and immediately following the test the affect is likely due to recall evaluations and doubts regarding their performance. Supportive feedback was shown to have the strongest effects in this phase, where stress may be at its highest. Remarkably, even though one would expect stress to naturally decrease the days after the three main PSU events, our model found no significant FtF feedback relationships for this time period. That the null hypothesis regarding the role of FtF feedback cannot be rejected is noteworthy; one would expect FtF interactions to account for some variation in the model, though we acknowledge that this result may be due to low power.

As argued in our theoretical section, the results provide initial support for the advantages of perceived affordances in social media communication: visual anonymity; asynchronicity, or message controllability; accessibility; and retrievability and persistence (Boyd, 2008; Peter & Valkenburg, 2013). For the context under study, it is probable that these affordances have rendered social media feedback

more effective than FtF feedback. Social media users are able to re-access prosocial replies and connect with intrapersonally meaningful sources of social support online, for instance, in Facebook groups with students already enrolled in their preferred careers and universities, or students who took the test the year before in similar emotional and academic situations. The same sources appear to be seldom (or perhaps never) accessible in FtF.

Although very modest, we believe that this effect of online prosociality decreasing stress calls for further longitudinal studies that could focus on how perceived affordances affect the efficacy of feedback provision. Future studies could further explore effects of specific relational feedback sources (e.g., parent or peer) in significant life events; and any effects stemming from the characteristic of the medium. Also of interest, while the effect differences presented are based on significance tests, effect size patterns are here shown to vary between phases. While the periods of test taking (W1 to W2) and final selection (W5 to W6) show the same differences between communication channels, the test taking phase (W3 to W4) shows no variation in effect sizes between online feedback and FtF. Although quite a small difference, these patterns suggest that context matters for effect sizes. For instance, whether feedback is taken into consideration for how to deal with the exam the day after, or to make a life-long decision regarding a particular study program or university. In contrast, in the test results phase, scores are already there and cannot be altered. Therefore, the "real life weight" of the decision that online feedback may support or inform may be a relevant variable to consider in future studies of online feedback effects.

Although not the aim of our study, we have also shown that the choice of time lags and the use of the RICLM provided results that disentangled the locus of media effects. Our results provide future researchers of the emotional effects from social media support with an appropriate time-window of one or two days after an event of significance; and a novel precedent of its significance at the intrapersonal level. Indeed, the majority of emotional fluctuations were markedly intrapersonal. Previous authors (Pearlin, Menaghan, Lieberman, & Mullan, 1981) had called for media effects to be studied at the individual level, rather than at the group or population level. The time frame for measuring effects also seems to support Bayer et al.'s (2018) conclusion that social media effects are fleeting in time and dependent on context.

Next, our results suggest that online and FtF feedback prosociality are positively associated at the interpersonal level, covarying in the same direction over time. Individual traits are likely involved in the strong perceived prosociality covariation of the two forms of feedback over time. We may also venture that, since a large portion of our sample belonged to a popular Facebook support group for the PSU, trait characteristics (e.g., savvy social media users or adeptness in requesting social support) may be at play.

It is possible that some factors may have affected variance in stress experienced or contributed to the small effect sizes, for example, subject heterogeneity in academic preparation or socioeconomic status. Moreover, the exit survey indicating that 56% of students had been accepted to the study program of their choice may indicate skew in the sample. It may be of interest to gauge the effects of FtF and online feedback in a more academically challenged sample. It is relevant to note further that while both feedback measures strongly correlated, this was expected given the similar measurements for both types of feedback prosociality. A future avenue for research could explore prosociality measurements that more implicitly reflect this media difference, for instance, based on perceived affordances of social media versus FtF.

Finally, our finding of no significant interpersonal relationships between both types of feedback and stress is in line with Utz & Breuer (2017), who also found no significant interpersonal effects of social networking sites on stress. That study used six-month time lags, whereas our study used a few

days and three weeks. In spite of these differences, it is still remarkable that no significant interpersonal associations were found in both studies, and especially so considering that our study investigated these relationships in the context of a specific stressful life event. Overall, we believe that this convergent result signals the meaningfulness of studying intrapersonal relationships; that is, social media may have a very slight downregulating effect on stress within, rather than across, individuals.

All in all, our results suggest that emotional effects of prosocial online feedback may be better evidenced at the intrapersonal level, which could inspire further research to assess these relationships (and particularly, with larger samples). These intrapersonal effects suggest interesting possibilities for other important psychological variables of considerable scholarly attention, such as well-being and life-satisfaction (e.g., Paez et al., 2019). Future studies may gauge specific variables contributions in underlying individual effects for greater specificity, such as feedback congruity with the emotion shared; or the effects of specific reply content and social media "reaction" buttons on the perceptions of online feedback prosociality.

Limitations

Although our study sample can be said to represent the Chilean youth, a larger sample size would have increased generalizability and bring greater statistical power. In attempting to deal with these shortcomings, incomplete cases, with some information marked as "missing," were included in the analysis. This important limitation may be dealt with in future studies by for example enhancing sample size. Second, future studies may include measures of perceived affordances to gauge effects stemming from the medium used. Third, items measuring FtF feedback prosociality instructed participants to think about the "last meaningful interaction," while those for online feedback were more general. Although the different wordings had a sound justification (as explained in the measures section), it is possible that online feedback effects would have been greater if we had enquired about meaningful feedback instances. Future studies may find a consistent manner to ask about the two feedback interaction modes. Fourth and last, our measure of online feedback included multiple forms of online feedback. Though not without precedent, as previous studies have argued in favor of measurements across multiple social media platforms (Primack et al., 2017), it may be that specific platforms, or combinations thereof, could yield improvements.

Conclusion

The present study adds to an emergent body of literature assessing contextual and temporal factors in social media effects. For the sample studied, results suggest that prosocial online feedback may moderately downregulate intrapersonal stresses from personally significant life events, such as stressful academic exams. Furthermore, in gauging the emotional effects of receiving supportive replies online, our methodology was shown to be apt to detect interpersonal and intrapersonal variance. Finally, short time lag windows of a few days to a few hours were shown to be more likely to detect social media effects.

Supporting Information

Additional Supporting Information may be found in the online version of this article.

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Notes

1. The traditional calendar dates are as follows: by the end of November, students take the test (phase 1; end of November); by the end of December, students receive test scores and apply to their preferred programs and universities (phase 2), and by the end of January, students learn about final selection results (phase 3).
2. The data set is available on the Open Science Framework (https://osf.io/ez62c/).
3. In addition to the five items measuring stress, the questionnaire included 12 other items. Positive and negative emotions were varied using the same question wordings. These were: confident, prepared, enthusiastic, hopeful, happy, proud, surprised, relieved, shameful, disappointed, upset, and sad. As the focus of this article, we report only stress-related emotions.

References

Ballantine P. W., & Stephenson, R. J. (2011). Help me, I'm fat! Social support in online weight loss networks. *Journal of Consumer Behaviour*, *10*(6), 332–337. doi: 10.1002/cb.374.

Barrera, M., Jr., Sandler, I. N., & Ramsey, T. B. (1981). Preliminary development of a scale of social support: Studies on college students. *American Journal of Community Psychology*, *9*, 435–447.

Bayer, J., Ellison, N., Schoenebeck, S., Brady, E., & Falk, E. B. (2018). Facebook in context (s): Measuring emotional responses across time and space. *New Media & Society*, *20*(3), 1047–1067. doi: 10.1117/1461444816681522.

Bollen, K. A., & Long, J. S. (1993). *Testing structural equation models* (Vol. *154*). Thousand Oaks, CA: Sage.

Boyd, D. M. (2008). *Taken out of context: American teen sociality in networked publics*. Berkeley, CA: University of California.

Boyd, D. (2010). Social network sites as networked publics: Affordances, dynamics, and implications. In Z. Papacharissi (Ed.), *A networked self* (pp. 47–66). New York: Routledge.

Burke, M., & Kraut, R. (2013). *Using Facebook after losing a job: Differential benefits of strong and weak ties*. Proceedings of the 2013 Conference on Computer Supported Cooperative Work (pp. 1419–1430), ACM, San Antonio, Texas, USA.

Chen, F. F. (2007). Sensitivity of goodness of fit indexes to lack of measurement invariance. *Structural Equation Modeling: A Multidisciplinary Journal*, *14*(3), 464–504.

Choi, M., & Toma, C. L. (2014). Social sharing through interpersonal media: Patterns and effects on emotional well-being. *Computers in Human Behavior*, *36*, 530–541. doi: 10.1016/j.chb.2014.04.026.

Cohen, S., & Wills, T. A. (1985). Stress, social support, and the buffering hypothesis. *Psychological Bulletin*, *98*(2), 310.

Curran, P. J., & Bauer, D. J. (2011). The disaggregation of within person and between person effects in longitudinal models of change. *Annual Review of Psychology*, *62*, 583–619. doi: 10.1146/annurev.psych.093008.100356.

Daft, R. L., & Lengel, R. H. (1986). Organizational information requirements, media richness and structural design. *Management Science*, *32*(5), 554–571.

Dormann, C., & Griffin, M. A. (2015). Optimal time lags in panel studies. *Psychological Methods*, *20*(4), 489. doi: 10.1037/met0000041.

Dovidio, J. F., Piliavin, J. A., Schroeder, D. A., & Penner, L. A. (2006). *The social psychology of prosocial behavior*. New York: Psychology Press.

Dunkel-Schetter, C., & Brooks, K. (2009). *The nature of social support. Encyclopedia of Human Relationships*, 1565–1570. Thousand Oaks, CA: Sage.

Erreygers, S., Vandebosch, H., Vranjes, I., Baillien, E., & De Witte, H. (2018). Positive or negative spirals of online behavior? Exploring reciprocal associations between being the actor and the recipient of prosocial and antisocial behavior online. *New Media & Society*, *20*(9), 3437–3456. doi: 10.1177/1461444817749518.

Evans, S. K., Pearce, K. E., Vitak, J., & Treem, J. W. (2016). Explicating affordances: A conceptual framework for understanding affordances in communication research. *Journal of Computer-Mediated Communication*, *22*(1), 35–52.

Fajnzylber, E., Lara, B., & Tomás León, V. (2018). Increased learning or GPA inflation? Evidence from GPA-based university admission in Chile. CEPA Working Paper No. 18-07. Stanford Center for Education Policy Analysis.

Faraj, S., & Azad, B. (2012). The materiality of technology: An affordance perspective. In P. M. Leonardi, B. A. Nardi & J. Kallinikos (Eds.), *Materiality and organizing: social interaction in a technological world*, *pp. 237*–258. Oxford, UK: Oxford University Press.

Folkman, S. (2013). Stress: Appraisal and coping. In *Encyclopedia of behavioral medicine* (pp. 1913–1915). New York: Springer. doi: 10.1007/978-1-4419-1005-9_215.

Folkman, S., & Lazarus, R. S. (1985). If it changes it must be a process: Study of emotion and coping during three stages of a college examination. *Journal of Personality and Social Psychology*, *48*(1), 150.

Gross, J. J. (2013). *Handbook of emotion regulation*. New York: Guilford Publications.

Hamaker, E. L. (2018). How to run a multiple indicator RI-CLMP with MPlus. Retrieved from: https://www.statmodel.com/download/RI-CLPM.pdf.

Hamaker, E. L., Kuiper, R. M., & Grasman, R. P. (2015). A critique of the cross-lagged panel model. *Psychological Methods*, (1), 102. doi: 10.1037/a0038889.

Hochschild, A. R. (2002). The sociology of emotion as a way of seeing. In G., Bendelow, S.J., Williams (Eds.), *Emotions in social life* (pp. 31–44). London, England: Routledge.

Huang, C. (2017). Time spent on social network sites and psychological well-being: A meta-analysis. *Cyberpsychology, Behavior, and Social Networking*, *20*(6), 346–354. doi: 10.1089/cyber.2016.0758.

Kühne, R. (2013). Testing measurement invariance in media psychological research. *Journal of Media Psychology*. doi: 10.1027/1864-1105/a000096.

Joinson, A. N. (2001). Self-disclosure in computer-mediated communication: The role of self-awareness and visual anonymity. *European Journal of Social Psychology*, *31*(2), 177–192. doi: 10.1002/ejsp.36.

Lazarus, R. S. (1996). *Psychological stress and the coping process*. New York: McGraw-Hill.

Luhmann, M., Hofmann, W., Eid, M., & Lucas, R. E. (2012). Subjective well-being and adaptation to life events: A meta-analysis. *Journal of Personality and Social Psychology*, *102*(3), 592. doi: 10.1037/a0025948.

Meng, J., Martinez, L., Holmstrom, A., Chung, M., & Cox, J. (2017). Research on social networking sites and social support from 2004 to 2015: A narrative review and directions for future research. *Cyberpsychology, Behavior, and Social Networking*, *20*(1), 44–51. doi: 10.1089/cyber.2016.0325.

Muthén, L. K. & Muthén, B. O. (2012). *Mplus user's guide*. Los Angeles, CA: Muthén & Muthén.

Nabi, R. L., Prestin, A., & So, J. (2013). Facebook friends with (health) benefits? Exploring social network site use and perceptions of social support, stress, and well-being. *Cyberpsychology, Behavior, and Social Networking*, *16*(10), 721–727.

Nils, F., & Rimé, B. (2012). Beyond the myth of venting: Social sharing modes determine the benefits of emotional disclosure. *European Journal of Social Psychology 42*, 672–681.

Nikkelen, S. W., Valkenburg, P. M., Huizinga, M., & Bushman, B. J. (2014). Media use and ADHD-related behaviours in children and adolescents: A meta-analysis. *Developmental Psychology*, *50*(9), 2228. doi: 10.1037/a0037318.

Ortiz, J. (2017). *PSU 2017: Más de la mitad de los 295 mil postulantes no tendrá un cupo en universidades del sistema de admisión*. Publimetro: Chile Edition. Retrieved from: https://www.publimetro.cl.

Ortony, A., Clore, G. L., & Collins, A. (1990). *The cognitive structure of emotions*. Cambridge, England: Cambridge University Press.

Paez, D., Delfino, G., Vargas-Salfate, S., Liu, J. H., Gil De Zúñiga, H., Khan, S., & Garaigordobil, M. (2019). A longitudinal study of the effects of Internet use on subjective well-being. *Media Psychology, 22*, 1–35. doi: 10.1080/15213269.2019.1624177.

Pearlin, L. I., Menaghan, E. G., Lieberman, M. A., & Mullan, J. T. (1981). The stress process. *Journal of Health and Social Behavior*, *22*(4), 337–356.

Peter, J., & Valkenburg, P. M. (2013). The effects of Internet communication on adolescents' psychological development. In E. Scharrer (Ed.), *Media Psychology* (pp. 678–697). San Francisco, CA: Wiley-Blackwell.

Primack, B. A., Shensa, A., Escobar-Viera, C. G., Barrett, E. L., Sidani, J. E., Colditz, J. B., & James, A. E. (2017). Use of multiple social media platforms and symptoms of depression and anxiety: A nationally-representative study among US young adults. *Computers in Human Behavior*, *69*, 1–9. doi: 10.1016/j.chb.2016.11.013.

Raby, M. (2018). Cifras de Internet en Chile 2018. Retrieved from: https://www.matiasraby.cl/cifras-de-internet-en-chile/.

Rimé, B. (2007). Interpersonal emotion regulation. In J. Gross (Ed.), *Handbook of emotion regulation* (pp. 466–468). New York, NY: The Guildford Press.

Rimé, B. (2009). Emotion elicits the social sharing of emotion: Theory and empirical review. *Emotion Review*, *1*(1), 60–85. doi: 10.1177/1754073908097189.

Rimé, B., Finkenauer, C., Luminet, O., Zech, E., & Philippot, P. (1998). Social sharing of emotion: New evidence and new questions. *European Review of Social Psychology*, *9*(1), 145–189. doi: 10.1080/14792779843000072.

Rodriguez-Hidalgo, C. T., Tan, E. S. H., & Verlegh, P. W. J. (2015). The social sharing of emotion (SSE) in online social networks: A case study in live journal. *Computers in Human Behavior*, *52*, 364–372. doi: 10.1016/j.chb.2015.05.009.

Shumaker, S. A., & Brownell, A. (1984). Toward a theory of social support: Closing conceptual gaps. *Journal of Social Issues*, *40*(4), 11–36.

Sundar, S. S. (2008). Self as source. Agency and customization in interactive media. In E. A. Konijn, S. Utz, M. Tanis, & S. B. Barnes (Eds.), *Mediated interpersonal communication* (pp. 59–74). New York: Routledge.

Tidwell, L. C., & Walther, J. B. (2002). Computer-mediated communication effects on disclosure, impressions, and interpersonal evaluations: Getting to know one another a bit at a time. *Human Communication Research*, *28*(3), 317–348. doi: 10.1111/j.1468-2958.2002.tb00811.x.

Trepte, S., Dienlin, T., & Reinecke, L. (2015). Influence of social support received in online and offline contexts on satisfaction with social support and satisfaction with life: A longitudinal study. *Media Psychology*, *18*(1), 74–105. doi: 10.1080/15213269.2013.838904.

Trepte, S., Masur, P. K., & Scharkow, M. (2018). Mutual friends' social support and self-disclosure in face-to-face and instant messenger communication. *The Journal of Social Psychology*, *158*(4), 430–445. doi: 10.1080/00224545.2017.1398707.

Utz, S., & Breuer, J. (2017). The relationship between use of social network sites, online social support, and well-being. *Journal of Media Psychology*, *29*(3), 115 –125. doi: 10.1027/1864-1105/a000222.

Valkenburg, P. M., & Piotrowski, J. T. (2017). *Plugged in: How media attract and affect youth*. New Haven, CT: Yale University Press.

Voelkle, M. C., Brose, A., Schmiedek, F., & Lindenberger, U. (2014). Toward a unified framework for the study of between person and within person structures: Building a bridge between two research paradigms. *Multivariate Behavioral Research*, *49*(3), 193–213. doi: 10.1080/00273171.2014.889593.

Walther, J. B., & Parks, M. R. (2002). Cues filtered out, cues filtered in: Computer mediated communication and relationships. In G. R. Miller (Ed.), *The handbook of interpersonal communication* (pp. 529–563). Thousand Oaks, CA: Sage.

Zaki, J., & Williams, W. C. (2013). Interpersonal emotion regulation. *Emotion*, *13*(5), 803. doi: 10.1037/a0033839.

Zhang, R. (2017). The stress-buffering effect of self-disclosure on Facebook: An examination of stressful life events, social support, and mental health among college students. *Computers in Human Behavior*, *75*, 527–537. doi: 10.1016/j.chb.2017.05.043.