

YOU HAD MAIL:  
A COMPARISON OF REFLECTING ON POSITIVE AND NEGATIVE EMAILS

by

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## Abstract

Self-reflection has long been viewed as a means to insight and well-being. However, the construction of the self in today's digital world includes communication and actions undertaken online as well as "in real life," creating an external memory of personal communication unchanged by time and retelling. The current study examined possible consequences of reflection using personal email archives when used in conjunction with written reflection on significant positive and negative events. Participants ( $N = 66$ ) were assigned to three gender-stratified groups comprising positive, negative, and neutral experience conditions. In each group, participants recalled and reflected upon a personal event of corresponding quality, reading personal email conversations regarding the experience followed by writing about it. Measures of well-being, meaning, nostalgia, relationship perception, and emotional reactivity were completed before and after the reflective manipulation and at follow-up, administered electronically two weeks following. A measure of thought content was administered at post-test and follow-up only. Data analyses were conducted using multiple mixed-design ANOVAs. Results at post-test showed significant increases in negative affect, nostalgia, and positive meaning, as well as a significant decrease in presence of meaning in life. At follow-up, results revealed a significant decrease in emotional reactivity for participants in the negative experience condition only. Additionally, significant decreases in positive affect, nostalgia, and recounting-type thoughts were found at follow-up. Implications for future research and practice are discussed.

## Lay Summary

In today's digital world, the construction of the self includes interaction online as well as "in real life." The current study examined consequences of self-reflection using personal email archives. Participants were assigned to one of three groups comprising positive, negative, and neutral experience conditions. In each group, participants reflected upon a personal event of corresponding quality, reading personal email conversations regarding the experience followed by writing about it. Measures related to self-reflection, well-being, and relationships were administered before and after the reflective intervention and two weeks later. Results at post-test showed significant increases in negative affect, nostalgia, and positive meaning, and a significant decrease in presence of meaning in life. At follow-up, results revealed a significant decrease in emotional reactivity for participants in the negative experience condition only. Additionally, significant decreases in positive affect, nostalgia, and recounting-type thoughts were found at follow-up. Implications for future research and practice are discussed.

## Preface

This thesis is original, independent, unpublished work by the author, C. Kopperson. Data collection was covered by UBC Behavioural Research Ethics Board Approval Certificate number H16-01605.

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*For Io, whose life will be lived in the flesh and in the cloud.*



## CHAPTER 1: INTRODUCTION

When was the last time you checked your email or quickly replied to a loved one's Facebook message? Connection and communication through social media, the term given to websites and applications that allow users to post and share networked content, is a growing phenomenon in today's wired world (O'Keeffe & Clarke-Pearson, 2011). Additionally, common email applications like Gmail offer users increasing amounts of web-based storage space, leading to vast personal archives of digital communication. As time goes on, social media and email users build up permanent digital histories that can span whole periods of a person's development as Internet use becomes common at increasingly younger ages (O'Keeffe & Clarke-Pearson, 2011). These digital time capsules provide unchanging access to past interpersonal experiences, whether joyful, shameful, or mundane; and yet a systematic investigation into the use and impact of these personal digital archives has not yet been undertaken.

Furthermore, self-reflection, a metacognitive consideration and evaluation of one's thoughts, feelings, behaviours, and experiences (Bennett-Levy et al., 2001), depends to a large extent upon one's personal memories and current emotional, cognitive, and behavioural interaction with those memories (Baumeister & Newman, 1994; Mitchell, Thompson, Peterson, & Cronk, 1997). In addition, self-reflection can be augmented by physical tokens such as letters, photographs, or songs, and by the contributions of others with overlapping memories, as in circumstances of reminiscence (Latha, Bhandary, Tejaswini, & Sahana et al., 2014). Accordingly, the purpose of this study was to examine the effects of reflection on archived email conversations concerning significant positive and negative interpersonal experiences on outcomes of well-being and relationship perceptions.

## **Reflection on Negative Experiences**

**Thinking.** In the psychology literature, much work demonstrates that ruminative reflection, involving a repetitive and passive focus on sources of distress and the possible causes and outcomes of that distress, can play a part in strengthening and perpetuating symptoms of depression and anxiety (Nolen-Hoeksema, Wisco, & Lyubomirsky, 2008; Takano & Tanno, 2009). On the other hand, individual reflection on personally distressing experiences has long been acknowledged to be an integral part of self-awareness and the process of purposeful change (Stein & Grant, 2014; Trapnell & Campbell, 1999). To that end, adaptive self-reflection on negative experiences is generally agreed to be more organized, systematic, and curious than ruminative reflection (Lyubomirsky, Sousa, & Dickerhoof, et al., 2006; Nolen-Hoeksema et al., 2008; Trapnell & Campbell, 1999). Likewise, mentally reliving negative memories from a self-immersed perspective has been shown to lead to rumination, while reflecting from a self-distanced or “fly on the wall,” observer perspective has been shown to lead to reconstruing the meaning made from the memories in an adaptive fashion (Ayduk & Kross, 2010; Kross & Ayduk, 2011).

**Talking.** Talking about past negative experiences is widely accepted as an adaptive method of reflection (Frattaroli, 2006; Gable, Reis, Impett, & Asher, 2004). Though Murray and Segal (1994) found that speaking privately into a microphone significantly reduced the painfulness of a traumatic interpersonal experience, generally inherent in the nature of talking about personal experiences is the aspect of social support (DeLongis, Folkman, & Lazarus, 1988; Lyubomirsky et al., 2006). Much research details the benefits of talking about negative experiences for psychological and physical health, as well as for well-being and relationship enhancement (Frattaroli, 2006). Verbally sharing distressing experiences has also been shown to encourage emotion regulation when in the presence of a validating listener (Pasupathi, 2003).

Furthermore, talking about negative experiences with others seems to initiate the organizing and analyzing functions crucial to the integration of memories into a coherent narrative (Pennebaker, 1993). The construction of a coherent narrative of one's experiences has been shown to be necessary for affirming memories and for making meaning out of adverse experiences (McLean, Pasupathi, & Pals, 2007).

**Writing.** Over the past 30 years, a great deal of research has examined the process and outcomes of writing about distressing and traumatic past experiences (e.g., Baikie & Wilhelm, 2005; Lepore, 1997; Lepore & Smyth, 2002; Pennebaker & Beall, 1986). In a paradigm first investigated and articulated by Pennebaker and Beall (1986) and Pennebaker (1989), expressive writing involves writing for 15-30 minutes per day, on at least three occasions, about an individual's deepest thoughts and feelings surrounding a distressing or traumatic event (Lepore & Smyth, 2002). This intervention has been linked to a host of beneficial outcomes for a wide variety of populations (Daiute & Buteau, 2002; Petrie, Fontanilla, Thomas, Booth, & Pennebaker, 2004; Pennebaker, 1993; Stanton et al., 2002). Improvements observed include decreased depressive symptoms (Lepore, 1997) and intrusive thoughts generated by PTSD (Klein & Boals, 2001; Lutgendorf & Antoni, 1999), and improved communication with significant others (Slatcher & Pennebaker, 2006).

Meaning-making has been proposed as a mechanism by which expressive writing promotes health and well-being benefits (Creswell et al., 2007; Park & Blumberg, 2002). In this sense, meaning-making suggests a result of increased insight, with an accompanying reduction in rumination and intrusive thoughts (Lepore, Ragan, & Jones, 2000; Lutgendorf & Antoni, 1999; Park & Blumberg, 2002;). To this end, research has shown that engaging in a traumatic writing condition leads to a shift in perceptions of events, allowing for greater assimilation of the experience, as well as decreased intrusive thoughts (Park & Blumberg, 2002). These findings

align with those of Fredrickson, Tugade, Waugh, and Larkin (2003) that suggested the experience of positive emotions in the aftermath of crisis, especially gratitude, buffers against depression and broadens and strengthens personal resources, consistent with the broaden-and-build theory of positive emotions (Fredrickson, 2001).

### **Reflection on Positive Experiences**

Inquiry into reflective means and processes surrounding personal positive events lacks the depth and breadth of study that has been afforded to reflection on negative experiences (Lyubomirsky et al., 2006). However, some evidence has emerged that thinking about and replaying (versus systematically analyzing) past positive events can improve health, well-being, and positive affect outcomes (Lyubomirsky et al., 2006; Vitterso, Overwien, & Martinsen, 2009). Furthermore, capitalization, or sharing and celebrating positive events with others, has also been studied as a strategy that can grant increased positive affect above and beyond the experience of the initial event (Conoley, Vasquez, Bello, Oromendia, & Jeske, 2015; Gable et al., 2004; Langston, 1994). Finally, writing about past positive experiences has been shown to have beneficial health and well-being effects, including positive affect and life satisfaction, and has been explored as a possible corollary to writing expressively about negative experiences (e.g., Burton & King, 2004, 2008, 2009; Wing, Schutte, & Byrne, 2006).

More specifically, the potential benefits of reflective nostalgic practices have been extensively studied in terms of self-affirmation (Charlesworth, Allen, Havelka, & Moulin, 2015), positive self-attribution (Vess, Arndt, Routledge, Sedikides, & Wildschut, 2012), meaning-making (Routledge et al., 2011; Routledge, Wildschut, Sedikides, Juhl, & Arndt, 2012), and relationship-building (Wildschut, Sedikides, Routledge, Arndt, & Cordaro, 2010; Wildschut, Bruder, Robertson, van Tilburg, & Sedikides, 2014). Furthermore, structured personal reminiscence has been developed into life review therapy, an intervention that involves the

telling of personal memories structured around a theme, leading to an evaluation of the meaning created in the teller's life (Butler, 1963; Haber, 2006). Life review is most often conducted with older adults (Bohlmeijer, Roemer, Cuijpers, & Smit, 2007) or people nearing end of life to combat depression (Serrano, Latorre, Gatz, & Montanes, 2004), but it has also been found to be effective with other groups, including the recently bereaved (Ando, Sakaguchi, Shiihara, & Izuhara, 2013; Haber, 2006).

**Positive psychology interventions.** From a positive psychology perspective, the benefits of reflecting on positive experiences have been widely recognized and explored, including through the lens of Fredrickson's (2001) broaden-and-build theory. The theory proposes that the experience of positive emotions leads to a broadening of available cognitive and behavioural actions, which can serve to build resilience and capacity for future coping. Additional research has shown that the experience of positive emotions can induce an "upward spiral" towards more positive affect, as well as have an undoing effect on the physiological effects of negative emotions (Fredrickson & Joiner, 2002; Fredrickson & Mancuso, Branigan, 2005; Fredrickson, Mancuso, Branigan, & Tugade, 2000). Guided by the broaden-and-build theory, researchers have posited that replaying positive emotions from past events could lead to increased beneficial outcomes (Lyubomirsky et al., 2006).

Brief positive psychology interventions have been designed to focus attention on the positive aspects of one's experience, such as creating daily lists of the things one is grateful for (e.g., Boehm, Lyubomirsky, & Sheldon, 2011), picturing and writing about one's optimal self (King, 2001; Layous, Nelson, & Lyubomirsky, 2013), and "savouring," or engaging in strategies to focus on cherished experiences or momentary positive feelings (Bryant, 1989; Quoidbach, Berry, Hansenne, & Mikolajczak, 2010). A positive psychology strategy for savouring positive experiences known as "positive mental time travel" or engaging in vivid remembering or

reminiscence of positive events (or anticipating future ones) has shown a positive correlation with affective well-being and happiness (Bryant, Smart, & King, 2005; Bryant & Veroff, 2007; Quoidbach, et al., 2010). These brief and cost-effective interventions do not involve deep, insight-driven reflection on one's past, but do aim to imitate the thoughts and practices of people characterized as dispositionally happy in order to access beneficial appraisals of past events (Lyubomirsky & Layous, 2013).

### **Technology-Mediated Reflection**

Though research has begun to elucidate the different interactions and effects of reflection on positive and negative events via thinking, writing, and talking, study into reflection aided by reading personal communication or personal writings about past significant events has not been undertaken within the field of psychology. In the field of human-computer interaction design, a burgeoning body of research has examined reflective practices aided by personal digital archives. This pursuit centres around the development of software applications for organizing and accessing social media and email archives (e.g., Cosley, Sosik, Schultz, Peesapati, & Lee, 2012; Hangal, Lam, & Heer, 2011; Kalnikaitė, & Whittaker, 2011). A by-product of this software development-focussed inquiry has been the recognition that tools promoting reflection and reminiscence engage users and have the potential to bring about meaningful personal change (e.g., Cosley et al., 2012; Hangal et al., 2011; Kalnikaitė & Whittaker, 2011; Sosik & Cosley, 2014). To this end, researchers have tested positive psychology software applications dependent on personal data from users' social media profiles, with promising results (Sosik, 2015; Sosik & Cosley, 2014). As the world becomes increasingly dependent on digital methods of expression and communication, an examination of the place of archived personal digital communication in self-reflective practice and its outcomes is necessary.

## **The Present Study**

Drawing from Lyubomirsky et al.'s (2006) analysis of the differential processes and effects of thinking, talking, and writing about positive and negative memories, the current study examined the ways in which reading from a personal archive of digital communication may further affect the processes and outcomes of reflection on positive and negative interpersonal experiences. The substantial line of research showing that brief experiences of nostalgia can have beneficial effects for the self-concept, relationship bonds, and positive meaning maintenance (Routledge, Wildschut, Sedikides, & Juhl, 2013) served as a guiding principle in the analysis of reflection on past positive experiences. Reflection on past negative interpersonal experiences was examined in light of the role of adaptive meaning-making in cognitive processing.

The central research question was: Do the effects of reading archived email conversations concerning a significant interpersonal event, in conjunction with written reflection on the same event, vary depending on the positive or negative quality of the event? It was hypothesized that positive and negative affect, life satisfaction, subjective happiness, meaning in life, nostalgia, perceptions of social support, emotional reactivity, positive meaning, event-specific rumination, and thought content would be affected by reading archived emails concerning a significant interpersonal event. The effects of the above outcomes will vary depending on the positive or negative quality of the event, to wit: In the negative conditions: (a) negative affect will increase post-intervention, but will decrease at follow-up; (b) positive affect will decrease post-intervention, with no further change expected; (c) life satisfaction will decrease post-intervention, but will increase at follow-up; (d) subjective happiness will decrease post-intervention, but will increase at follow-up; (e) meaning in life will decrease post-intervention, but will increase at follow-up; (f) nostalgia will increase post-intervention, but will decrease at follow-up; (g) perceptions of social support will decrease post-intervention, but will increase at

follow-up; (h) emotional reactivity will increase post-intervention, but will decrease at follow-up; (i) positive meaning will increase post-intervention, with no further change expected; (j) event-specific rumination will increase post-intervention, but will decrease at follow-up; (k) recounting thoughts will decrease at follow-up; and (l) reconstruing thoughts will increase at follow-up.

In the positive conditions: (a) negative affect will decrease post-intervention, with no further change expected (b) positive affect will increase post-intervention, with no further change expected; (c) life satisfaction will increase post-intervention, with no further change expected; (d) subjective happiness will increase post-intervention, with no further change expected; (e) meaning in life will increase post-intervention, with no further change expected; (f) nostalgia will increase post-intervention and decrease at follow-up; (g) perceptions of social support will increase post-intervention, with no further change expected; (h) emotional reactivity will increase post-intervention and decrease at follow-up; (i) positive meaning will increase post-intervention, with no further change expected; (j) event-specific rumination will not change; (k) recounting thoughts will increase at follow-up; and (l) reconstruing thoughts will not change.

For the neutral condition, no change across all variables will be detected.



## CHAPTER 2: METHODS

### **Participants**

The current study included 66 participants recruited on the University of British Columbia Vancouver campus (86.4% female, 10.6% male, 1.5% transgender, and 1.5% non-binary) ranging in age from 18-47 ( $M = 22.71$ ,  $SD = 4.72$ ). Criteria for participation included being of age 18 and older, in order to capture a sample of adults who had experienced past significant positive and negative interpersonal events captured in email conversations. Furthermore, participants were asked to self-identify as frequent email users (i.e., use email at minimum on a weekly basis). Participant ethnicities included: Asian/Asian-Canadian (42.4%); White/European-Canadian (40.9%); Asian Indian (5.1%); African, African-Canadian, Black (3%); Multiracial (3%); Hispanic, Latina/o American (1.5%).

### **Measures**

The following measures were completed by participants at three time points during the study: at baseline (T1), immediately post-intervention (T2), and via emailed survey two weeks post-intervention (T3).

**Demographic questionnaire.** This questionnaire solicited information regarding the participant's age, gender, race/ethnicity and was administered at T1 only.

**Positive and Negative Affect Schedule (PANAS).** The affective component of subjective well-being was assessed using the PANAS (Watson, Clark, & Tellegen, 1988). This 20-item self-report measure is scored by totalling the item scores for each subscale (positive affect and negative affect), which can be rated from 1 (*very slightly or not at all*) to 5 (*extremely*; Watson & Clark, 1999). The scale has demonstrated high internal reliability and construct validity in a large adult sample ( $N = 1,003$ ) of the non-clinical population (Crawford & Henry, 2004), as well as in the original scale development samples of undergraduate students, university

employees, and psychiatric inpatients (Watson et al., 1988). Reliability has been estimated with a Cronbach's alpha of .86-.90 for the positive affect subscale, and .84-.87 for the negative affect subscale (Crawford & Henry, 2004; Watson et al., 1988). Additionally, convergent and discriminant validity with measures of depression and anxiety were found to be consistent with the tripartite theory of the relationships between depression, anxiety, and positive and negative affect. (Clark & Watson, 1991; Crawford & Henry, 2004).

**Satisfaction with Life Scale (SWLS).** Comprising five items, Diener, Emmons, Larsen, & Griffin (1985) developed this scale to measure the cognitive assessment of well-being, which is based on the congruency between an individual's personal criteria for success or satisfaction in life and perceived actual circumstances. Test-takers are asked to weight global judgements of life satisfaction, rather than specific domains, on a scale of 1 (*strongly disagree*) to 7 (*strongly agree*). After scores have been totalled, they can be interpreted either relatively, against normative data calculated for groups from a diverse range of demographics, or absolutely, with a score of 20 taken as the midpoint of the scale, or the point at which the test-taker is approximately equally satisfied and dissatisfied (Pavot & Diener, 2008).

The SWLS has demonstrated strong internal consistency, with Diener et al.'s (1985) original report of a coefficient alpha of .87 reinforced by several subsequent studies that found alphas ranging from .79-.89 (Pavot & Diener, 2008). In addition, test-retest coefficients across several studies have been moderate, ranging from .64-.84 for intervals up to two months, while they decline to .50 and .54 for intervals of 10 weeks and 4 years respectively. Evidence has shown that this decline may be attributed to the scale's sensitivity in detecting changes in life satisfaction over time (Pavot & Diener, 2008).

**Subjective Happiness Scale (SHS).** The SHS assesses global, subjective happiness using four items designed to capture both absolute and relative ratings of happiness, as well as

comparative characterizations against descriptions of happy and unhappy individuals (Lyubomirsky & Lepper, 1999). To score the measure, the mean of the four items, rated on a scale of 1 (*strongly disagree*) to 7 (*strongly agree*), is calculated (Lyubomirsky & Lepper, 1999).

Construction of the SHS involved assessment of reliability and validity data across 14 samples gathered from different times and places (total of  $N = 2732$ ) and administered in a variety of settings (Lyubomirsky & Lepper, 1999). Care was taken to use samples encompassing a broad range of ages, and two of the samples were recruited in Russia in order to increase the cross-cultural application of the measure (Lyubomirsky & Lepper, 1999). Across the 14 samples, the Cronbach's alpha obtained ranged from .79 - .94 ( $M = .86$ ), while test-retest reliability coefficients spanned .55-.90 based on intervals ranging from three weeks to one year (Lyubomirsky & Lepper, 1999). Additionally, strong convergent validity was demonstrated through correlation with other happiness measures as well as moderate correlations with dispositional measures of theoretically related constructs. These included the SWLS, the Delighted-Terrible Scale, the Self-Esteem Scale, and the Beck Depression Inventory (Andrews & Withey, 1976; Beck, 1967; Diener et al., 1985; Rosenberg, 1965). To bolster this validity evidence, discriminant validity was demonstrated through lack of correlations with theoretically unrelated constructs such as college GPA and stressful life events (Lyubomirsky & Lepper, 1999). Validity of the self-report data for the SHS was reinforced by the use of informant reports, with correlations with self-report scores ranging from .41-.66 (Lyubomirsky & Lepper, 1999).

**Meaning in Life Questionnaire (MLQ).** Steger et al. (2006) defined meaning in life as “the sense made of, and significance felt regarding, the nature of one's being and existence” (p. 81). To assess this construct, the MLQ comprises two subscales: presence of and search for meaning. Each MLQ subscale is operationalized in 10 self-report items, rated on a scale from 1 (*absolutely untrue*) to 7 (*absolutely true*). Scoring is accomplished by totalling the scores for

each subscale (Steger, 2010). The MLQ demonstrated theoretically-expected convergent validity with associated measures (e.g., the SWLS and the Intrinsic/Extrinsic Religiosity Scale), as well as good to excellent internal reliability (alphas ranging from .81-.92 across the two subscales), and acceptable test-retest reliability ( $r = .70-.73$ ) in several samples of undergraduate students ( $N = 154, 400, \text{ and } 70$ ; Diener et al., 1985; Gorsuch & McPherson, 1989; Steger et al., 2006).

**State Nostalgia Scale (SNS).** Wildschut, Sedikides, Arndt, and Routledge (2006) developed a face-valid, 3-item measure of state nostalgia, rated on a 6-point scale (1 – *strongly disagree*, 6 – *strongly agree*). The measure comprises the following items: “Right now, I am feeling quite nostalgic,” “Right now, I am having nostalgic thoughts,” and “I feel nostalgic at the moment” (Wildschut et al., 2006, p. 983).

In three subsequent studies, the measure has been used to generate an index of state nostalgia by averaging the ratings of the three items (Routledge et al., 2011; Wildschut et al., 2010; Zhou, Sedikides, Wildschut, & Gao, 2008) and has consistently shown strong evidence of reliability with a Cronbach’s alpha of .95-.98 across the four studies (Routledge et al., 2011; Wildschut et al., 2006; Wildschut et al., 2010; Zhou et al., 2008). Furthermore, Wildschut et al. (2006) used correlations between results of the Batcho Nostalgia Inventory (BNI; Batcho, 1995) and their 3-item nostalgia measure to demonstrate strong evidence for convergent validity.

**Medical Outcomes Study (MOS) Social Support Survey.** The MOS Social Support Survey is a 19-item, self-report measure assessing perceived functional social support (Sherbourne & Stewart, 1991). It encompasses one index of global functional social support and four dimensions of social support: emotional/informational support, tangible support, positive social interactions, and affectionate support (RAND Health, 2016). With the source of support unspecified, participants are asked to rate how often each kind of support is available to them when needed. Items are rated across five choices (*none of the time, a little of the time, some of*

*the time, most of the time, and all of the time*; Sherbourne & Stewart, 1991). To score each subscale, the averages of items belonging to each subscale are calculated, or an overall social support index can be obtained by averaging the scores of the 18 items of the four subscales and the additional functional social support item (RAND Health, 2016).

Reliability estimates show a Cronbach's alpha of .91-.96 for the four subscales and .97 for the overall support index. Additionally, test-retest reliability over one year was demonstrated with coefficients of .72-.76 for the subscales, and .78 for the overall support index (Sherbourne & Stewart, 1991). Evidence for convergent validity was obtained through high correlations with measures of loneliness and emotional ties, as well as family and marital functioning and mental health, as expected. Discriminant validity was demonstrated by expected low correlation with measures of physical functioning and pain intensity (Sherbourne & Stewart, 1991). Multitrait and confirmatory factor analysis supported the scoring of four subscales. However, as the subscales are highly correlated as befits dimensions representative of a common higher-order factor, the calculation of an overall index across all items is also supported.

**Best/Worst Experience Questionnaire.** This brief questionnaire was designed to elicit a significant positive or negative interpersonal event from the past, adapted from Lyubomirsky et al. (2006). For the purposes of this study, the negative experience version reads:

Please list the two (2) WORST or most UPSETTING interpersonal experiences of your life, occurring at least six months prior to the present. These must be events for which you are sure you have saved email conversations between you and the person or persons involved. Then, please rate how upsetting these events are to you now on a 10-point Likert scale (1 - *not upsetting*, 10 - *extremely upsetting*) and select the one that is most upsetting" (Lyubomirsky et al., 2006, p. 696).

Likewise, the positive experience version reads:

Please list the two (2) BEST or HAPPIEST interpersonal experiences of your life, occurring at least six months prior to the present. These must be events for which you are sure you have saved email conversations between you and the person or persons involved. Next, please rate how joyful or happy each experience is to you now on a 10-point Likert-type scale (1 - *not happy*, 10 - *extremely happy*). And finally, please highlight the one experience that is the most joyful or happy for you” (Lyubomirsky et al., 2006, p. 699).

**Emotional Reactivity Index (ERI).** To measure emotional reactivity, or the experience of becoming overwhelmed by emotions associated with past events, researchers have used three questions to examine participants’ current emotions about a past experience: “Thinking about this event still makes me feel upset (e.g., sad, hurt, angry, rejected);” “I re-experienced the emotions I originally felt during the conflict when I thought about it now;” and “As I think about the event now, my emotions and physical reactions are still intense” (1 – *strongly disagree*, 7 – *strongly agree*). Ratings of these items are averaged to create an index of emotional reactivity, with Cronbach’s alpha ranging from .83-.89 (Ayduk & Kross, 2010; Park, Ayduk, & Kross, 2015).

For the purposes of this study, participants in the intervention conditions were instructed to “Please answer the following three questions about the significant interpersonal experience you have indicated on the Best/Worst Experience Questionnaire.” Participants in the control condition were given instructions to “Please answer the following three questions about a neutral interaction with a friend or acquaintance.” Additionally, the wording of the first question was altered to reflect the quality of the positive and neutral interpersonal experience conditions. For participants assigned to the positive experience condition, the first question read “Thinking about this event still makes me feel happy (e.g., joyful, excited, accepted, contented),” while for those

in the neutral experience condition, it read “Thinking about this event still makes me feel upset or happy (e.g., sad, hurt, angry, rejected / joyful, excited, accepted, content).”

**Positive Meaning Scale (PMS).** Fredrickson et al. (2003) adapted Moos’s (1988) Coping Responses Inventory to examine the extent to which individuals find positive meaning in problematic and stressful circumstances, creating the Positive Meaning Scale. The scale includes two items taken from Moos’s (1988) Coping Response Inventory, rated on a 4-point scale (0 – *no*, 3 – *yes, fairly often*): “Did you try to see the good side of the situation?” and “Did you think about how this event could change your life in a positive way?” Three additional items are rated on a different 4-point scale (0 – *definitely no*, 3 – *definitely yes*): “Did anything good come out of dealing with this problem?” “Do you feel that you might find benefit in this situation in the long-term?” and “Do you think it is likely that there is something to learn from this experience?” (Fredrickson et al., 2003, p. 368-369). Estimates of internal reliability in the form of alpha coefficients for the scale have ranged from 0.73 – 0.79 (Fredrickson et al. 2003; Steinhardt et al., 2015; Vázquez & Hervás 2010).

For the purposes of this study, the instructions for the Positive Meaning Scale given to participants in the intervention conditions read: “Please answer the following questions about the significant interpersonal experience you have indicated on the Best/Worst Experience Questionnaire.” Participants in the control condition were instructed to: “Please answer the following questions about an acquaintance for whom you do not have any strong feelings.”

**Rumination about an Interpersonal Offense Scale (RIO).** The RIO assesses situation-specific (state) rumination: “the repetitive cognitive rehearsal” of a past interpersonal offense, focussing on the associated negative aspects (Wade, Vogel, Liao, & Goldman, 2008, p. 421). Following a prompt asking respondents to recall a specific hurtful experience and reflect on their thoughts about it over the past seven days, it contains six items answered with a 5-point Likert

scale (1 – *strongly disagree* to 5 – *strongly agree*; Wade et al., 2008). Scoring is accomplished by totalling the responses to each item: higher scores indicate a higher level of state rumination.

Evidence for validity and reliability of the RIO was gathered using three samples of undergraduate students ( $N = 514$ ,  $N = 340$ , and  $N = 113$ ), with the third sample comprised of participants being treated for concerns related to an interpersonal offense (Wade et al., 2008). Exploratory and confirmatory factor analysis supported the unidimensional structure of the RIO, and confirmatory factor analysis also served to demonstrate that the RIO measures a construct distinct from, though related to, that of trait rumination (Wade et al., 2008). Convergent and discriminant validity evidence was gathered through expected correlations with several other measures, including the Anger Rumination Scale and the Trait Forgiveness Scale (Wade et al., 2008).

Finally, internal reliability was estimated with alphas of .92, .91, and .92 for the three samples respectively, and test-retest reliability was established at  $r = .51$ , over 10 weeks. Because the RIO is a state measure and must be sensitive to change when it occurs, the researchers examined the differences between the pre- and post-test results of those participants receiving treatment and those who were not, and found that individuals who had been in treatment for an interpersonal event showed significantly less rumination post-treatment than those who were not, implying that the RIO is sensitive to change (Wade et al., 2008).

Like the Positive Meaning Scale, for the purposes of this study, participants in the intervention conditions were instructed to: “Please answer the following questions about the person from the significant interpersonal experience you have indicated on the Best/Worst Experience Questionnaire.” Participants in the control condition were asked to: “Please answer the following questions about an acquaintance for whom you do not have any strong feelings.”



**Thought Content Index (TCI).** To examine thought content surrounding the interpersonal experience reflected upon, an index created by Ayduk & Kross (2010) was administered at T2 and T3. Participants rated four statements on a 7-point scale (1 – *strongly disagree*, 7 – *strongly agree*). The first statement served to represent recounting thoughts: “My thoughts focused on the specific chain of events—sequence of events, what happened, what was said and done—as I thought about the experience in this study” (Ayduk & Kross, 2010, p. 812). The three following items were averaged to create an index of reconstruing thoughts: “As I thought about my experience during the study I had a realization that caused me to think differently about the experience,” “As I thought about my experience during the study I had a realization that made me experience a sense of closure,” and “Thinking about my experience during the experiment led me to have a clearer and more coherent understanding of this experience” (Ayduk & Kross, 2010, p. 812).

### **Procedure**

Ethics approval from the University of British Columbia’s Behavioural Research Ethics Board was gained prior to beginning study recruitment.

**Participant contact.** To recruit participants, a convenience sampling method was carried out by posting flyers throughout the campus at the University of British Columbia. Additionally, solicitations for participants were broadcasted through the monthly email digest of the Educational and Counselling Psychology, and Special Education Department of the same university, and posted on the paid studies list run by the university’s Psychology Department. Furthermore, the author of the study and two research assistants performed several brief in-class recruitment presentations with the permission of the course instructors. A \$10 gift card honorarium was offered to all participants, except in the cases of two participants who were

awarded extra credit for participation in the study with the approval of their instructor. See Appendix A for recruitment poster.

**Sampling.** Stratified sampling procedures were used with an attempt to equate groups based on gender, and participants were assigned to a total of three conditions, comprising positive, negative, and neutral (control) interpersonal experience groups. At T1 and T2, the positive experience condition contained 22 participants, the negative experience condition included 21 participants, and the neutral experience condition contained 23. At T3, the positive and negative experience conditions each included 17 participants, while the neutral experience condition contained 18.

**Baseline assessment.** Participant sessions were scheduled by the study author via email, at which time a form summarizing the study's tasks and participants' rights was sent to each participant (see Appendix B). To commence the lab sessions, the researcher reviewed the informed consent form with the participant and obtained their signature, as well as provided them with a list of resources should they require emotional support following participation (see Appendix C). Following the informed consent process, all participants completed a survey package (see Appendix D) containing a demographic survey and a set of measures comprising the PANAS, SWLS, SHS, MLQ, SNS, and MOS Social Support Survey. The ERI, PMS, and RIO were administered at baseline for those in the control group. However, participants in the intervention groups completed the ERI, PMS, and RIO after they had identified a significant relationship event using the Best/Worst Experience Questionnaire, in order to capture perceptions of the specific relationships addressed in the intervention conditions.

**Intervention procedure.**

***Negative interpersonal experience condition.*** Following baseline assessments, participants in the negative interpersonal experience group were administered the Worst

Experience Questionnaire. Once the negative interpersonal experience had been selected, the ERI, PMS, and RIO were administered. The researcher then invited participants to search their email archives on a provided computer for conversations related to their indicated negative interpersonal experiences with the following prompt:

Please use the next 15 minutes to search your email account for conversations related to this event. There is no need to have a specific email conversation in mind, but by the end of 15 minutes please choose an email conversation regarding this event that stands out as significant to you.

The participants had a maximum of 15 minutes to search for and choose their email conversation; they then had up to an additional 15 minutes to read and reflect on the email conversation.

Following the email reflection, the researcher provided the participant with a blank word-processing document and read to the participant the following instructions, adapted from Pennebaker and Francis (1996) by Lyubomirsky et al. (2006):

For the next fifteen minutes, I would like for you to write about your deepest thoughts and feelings regarding the most upsetting life experience you noted on the Worst Experience Questionnaire. In your writing, I'd like you to really let go and explore your deepest emotions and thoughts. You might tie your topic to your past, your present, or your future, or to who you have been, who you would like to be, or who you are now. Don't worry about using complete sentences or being logical. Just write whatever comes to your mind about this experience (p. 696-697).

After 15 minutes, the researcher told the participant to stop writing, saved the document, and administered the post-intervention questionnaires.

***Positive interpersonal experience condition.*** The participants in the positive experience condition were administered the Best Experience Questionnaire. The remainder of the procedure for the positive interpersonal experience condition was identical to that of the negative interpersonal experience condition.

***Neutral interpersonal experience condition.*** Participants in the neutral interpersonal experience condition served as the control. Following completion of all pre-test measures, they were given the prompt:

Please use the next 15 minutes to search your email archive for a neutral email conversation or thread that you engaged in with someone else. This might be something such as planning a routine meal, making an appointment, or checking in with a colleague regarding a mundane task.

The remainder of the instructions for the neutral experience condition followed the same procedure as the two intervention conditions.

**Post-test assessment.** At post-test, participants once again completed the same set of measures as the pre-test assessment. Additionally, they completed the TCI.

**Follow-up assessment.** Two weeks following participation in the study, each participant was emailed an online survey using the FluidSurvey UBC Survey Tool. This service complies with the BC Freedom of Information and Protection of Privacy Act and ensures that all data is stored and backed up in Canada (The University of British Columbia, n.d.). The online survey included the post-test questionnaires and a sheet providing debriefing information (see Appendix E).

## CHAPTER THREE: RESULTS

### **Preliminary Analyses**

As the dataset contained no missing data, scale and subscale scores were calculated and inspected for outliers, with values compared to upper and lower boundaries at the 25<sup>th</sup> and 75<sup>th</sup> percentiles (Field, 2013). Following the finding that the data did not contain outliers, each variable was visually examined for skewness and kurtosis. Additionally, skewness and kurtosis scores were screened for values outside of the acceptable range of +/-1, and scales and subscales with values outside of this range were transformed (von Hippell, 2011). Specifically, the PANAS negative affect subscale was positively skewed beyond +1 at T1, T2, and T3. A log<sub>10</sub> transformation was performed at all three time points to reduce skewness. Despite the log<sub>10</sub> transformation, the PANAS negative affect subscale at T1 remained slightly positively skewed outside of the +1 acceptable boundary.

Additionally, all variables were examined at T1 for group differences between conditions. The results of one-way ANOVAs showed that the positive experience condition ( $n = 22$ ), the negative experience condition ( $n = 21$ ), and the neutral experience condition ( $n = 23$ ) were not significantly different from one another at T1 across all scales and subscales. See Table 1 for the means and standard deviations for all measures at T1 for the positive, negative, and neutral experience conditions.

### **Intervention Outcomes**

Mixed design ANOVAs were used to examine differences in participants' scores across the three conditions and the three time points for all scales used. Separate ANOVAs were performed for variables from T1 to T2 and T2 to T3 to account for the difference in number of participants at the T3 time point. To adjust for family-wise error due to the doubled use of T2 data, all  $p$ -values were doubled, unless otherwise noted.

**T1 to T2.** From T1 to T2, significant interactions did not emerge; however, there were significant main effects for time for the PANAS negative affect subscale,  $F(1, 63) = 5.29, p = .05, \eta_p^2 = .08$ ; MLQ presence subscale,  $F(1, 63) = 6.42, p = .03, \eta_p^2 = .09$ ; SNS,  $F(1, 63) = 21.16, p < 0.01, \eta_p^2 = .25$ ; and PMS,  $F(1, 63) = 7.92, p = .01, \eta_p^2 = .11$ . Post-hoc analyses, using the Bonferroni adjustment, showed that the PANAS negative affect subscale increased from T1 ( $M = 1.15, SD = .13$ ) to T2 ( $M = 1.19, SD = .15, p = .05$ ), the SNS increased from T1 ( $M = 3.05, SD = 1.38$ ) to T2 ( $M = 3.87, SD = 1.34, p < .001$ ), and the PMS increased from T1 ( $M = 8.58, SD = 4.28$ ) to T2 ( $M = 9.62, SD = 4.12, p = .01$ ). Finally, the MLQ presence subscale decreased significantly from T1 ( $M = 21.58, SD = 6.55$ ) to T2 ( $M = 20.53, SD = 6.78, p = .01$ ). See Table 2 for means and standard deviations for all measures across all participants at T1 and T2, and Table 3 for correlation values among all measures at T1 and T2.

Additionally, there was a significant main effect for condition for the ERI,  $F(2, 63) = 4.25, p = .04, \eta_p^2 = .12$ , and the main effect of condition for the SNS approached significance,  $F(2, 63) = 3.73, p = .06, \eta_p^2 = .11$ . Post-hoc analyses using the Bonferroni adjustment showed that a significantly higher level of the ERI was found in the positive experience condition ( $M = 5.32, SD = 1.17$ ) than in the neutral experience condition ( $M = 4.30, SD = 1.17, p = .01$ ). Similarly, a higher level of the SNS was found in the positive experience condition ( $M = 3.94, SD = 1.11$ ) than in the neutral experience condition ( $M = 3.04, SD = 1.11, p = .02$ ).

**T2 to T3.** From T2 to T3, a significant main effect for time was observed for the PANAS positive affect subscale,  $F(1, 49) = 17.30, p < .001, \eta_p^2 = .26$ . A post-hoc analysis using the Bonferroni adjustment showed that it decreased significantly from T2 ( $M = 26.94, SD = 8.37$ ) to T3 ( $M = 22.58, SD = 7.75, p < .001$ ). A main effect for time was also found for the SNS,  $F(1, 49) = 34.53, p < .001, \eta_p^2 = .41$ . With a post-hoc analysis using the Bonferroni adjustment, the

SNS was shown to have decreased significantly from T2 ( $M = 3.95$ ,  $SD = 1.36$ ) to T3 ( $M = 2.61$ ,  $SD = 1.34$ ,  $p < .001$ ). Similarly, a main effect for time was demonstrated for the TCI recounting thoughts subscale,  $F(1, 49) = 5.77$ ,  $p = .02$ ,  $\eta_p^2 = .11$ . For all analyses of the TCI,  $p$ -values were not doubled, as the TCI was administered and analyzed at T2 and T3 only. For the TCI recounting thoughts subscale, a Bonferroni-adjusted post-hoc analysis showed that there was a significant decrease from T2 ( $M = 5.23$ ,  $SD = 1.39$ ) to T3 ( $M = 4.68$ ,  $SD = 1.40$ ,  $p = .02$ ). Additionally, a significant main effect for condition emerged for the TCI recounting thoughts subscale,  $F(2, 49) = 4.77$ ,  $p = .01$ ,  $\eta_p^2 = .16$ . As the assumption of equal variances was violated for this variable at T2 (Levene's test,  $p = .002$ ), the Games-Howell adjustment was used in conducting the post-hoc analysis, revealing that significantly higher levels of recounting thoughts were present in the negative experience condition ( $M = 5.47$ ,  $SD = 1.04$ ) than in the neutral experience condition ( $M = 4.39$ ,  $SD = 1.04$ ,  $p = .01$ ).

For the ERI, a significant main effect for time was present,  $F(1, 49) = 35.64$ ,  $p < .001$ ,  $\eta_p^2 = .42$ , as well as for condition,  $F(2, 49) = 6.17$ ,  $p = .008$ ,  $\eta_p^2 = .20$ . Additionally, a significant interaction effect emerged from T2 to T3 for the ERI,  $F(2, 49) = 7.94$ ,  $p = .002$ ,  $\eta_p^2 = .25$ , indicating that the intervention had different effects on participants' ratings of emotional reactivity depending on which condition they were in. Simple effects analysis using the Bonferroni adjustment revealed that only participants in the negative experience condition reported a significant decrease in emotional reactivity from T2 ( $M = 5.06$ ,  $SD = 1.34$ ) to T3 ( $M = 3.12$ ,  $SD = 1.51$ ,  $p < .001$ ). See Table 4 for means and standard deviations across conditions at T2 and T3, Table 5 for means and standard deviations for all measures across all participants at T2 and T3, and Table 6 for correlation values among all measures at T2 and T3.

## CHAPTER FOUR: DISCUSSION

At some point or another, most of us will find ourselves in a position to review and perhaps relive some of our past conversations, decisions, or relationships. Given advances in technology, these experiences have since progressed to digital applications. How does looking back at our ever-growing personal digital archives affect our well-being and sense of our relationships? The present study approached this question by examining the effects of using past email conversations in reflection on significant positive and negative interpersonal experiences.

Findings revealed that whether people reflected on personal emails about positive, negative, or neutral experiences, immediately afterwards they tended to experience more negative emotions, nostalgia, and an increased sense of having made positive meaning out of the experience. Conversely, the overall perception of having meaning in life decreased, and positive affect, satisfaction with life, subjective happiness, social support, and state rumination remained unchanged over time. However, people who reflected on an email conversation concerning a past positive experience reported more emotional reactivity and nostalgia overall compared to those reflecting on neutral past experiences.

Two weeks after engaging in reflection on an email conversation, only people who had been assigned to look back at a negative interpersonal experience felt less emotional reactivity when they thought back to the memory. However, regardless of the type of experience they were asked to reflect on, people also underwent a decline in positive emotions, nostalgia, and detailed, immersive thoughts about the past experience two weeks after the intervention. Perceptions of negative affect, satisfaction with life, subjective happiness, meaning in life, social support, state rumination, positive meaning, and thoughts of new ways of looking at the experience showed no change at this point. Additionally, people who reflected on email conversations about a past



negative experience reported more recounting-type thoughts overall compared to those who reflected on a neutral exchange.

Congruent with studies that have examined affective effects of self-disclosure and reflection, the increase in T2 negative affect suggests that the immersive nature of the reflective exercise may bring to the forefront uncomfortable memories and associated emotions (Lutgendorf & Antoni, 1999; Murray & Segal, 1994; Páez, Velasco, & González, 1999). Similarly, the hypothesized increase in state nostalgia at T2, followed by a decrease at T3, aligns with established understandings of nostalgia as a process of making meaning from past events that are usually triggered by specific cues (Vess et al., 2012). Previous studies have linked nostalgia with a wide variety of protective and facilitative effects including buffering against loneliness, group cohesiveness, positive affect, and self-regard (Charlesworth et al., 2015; Vess et al., 2012; Wildschut et al., 2006). Indeed, though the increase in state nostalgia was accompanied by an increase in negative affect at T2, the simultaneous increase in positive meaning, as hypothesized, may point to the unique nature of the intervention: engaging in reflection on past experiences documented in the participant's own words may be (sometimes unexpectedly) affectively distressing and yet provide an opportunity for re-evaluation and processing. In keeping with this interpretation, studies of positive meaning-making have found that being asked to write reflectively about traumatic events leads to a shift in situational meaning (Park & Blumberg, 2002).

Additionally, the significant decrease in meaning in life at T2, as well as positive affect at T3, both corresponded to the directions hypothesized for the negative experience condition only. Extant research examining reflection on past negative events has similarly yielded inconclusive results concerning measures of transitory affect, with most studies showing short-term decline (Lutgendorf & Antoni, 1999; Murray & Segal, 1994; Páez et al., 1999), some studies showing

long-term improvement (Páez et al., 1999) and others showing no difference compared to the control (Francis & Pennebaker, 1992; Murray & Segal, 1994). Furthermore, the T2 decrease in meaning in life may be informed by the unsettling nature of confrontation with actual conversations surrounding a past significant experience that do not match up to the coherent internal narrative the individual had previously created (McLean et al., 2007).

At T3, the finding that only participants in the negative experience condition reported a significant decline in emotional reactivity aligns with research showing that expressive writing about distressing events leads to less overwhelming emotion associated with the memories over time (Lepore & Greenberg, 2002; Park et al., 2015). Additionally, the significant decrease in recounting-type thoughts is consistent with studies that have examined the role of self-distanced reflection in crafting adaptive narratives from negative events, generally involving more reconstruing-type thoughts and less recounting (Ayduk & Kross, 2010; Kross & Ayduk, 2008). However, results of recounting-type thoughts in this study may also speak to the temporal distance from the initial intervention, as thought content types were not measured at pre-test, when the specific experience to be reflected upon had not yet been determined. At the same time, the significantly higher level of recounting thoughts found regardless of time-point in the negative experience condition, compared to the neutral condition, does point to a difference in the ways that negative events are contemplated.

Taken together, these results begin to tell a story about the effects of reflecting on emails about past personal experiences, whether the nature of those experiences is positive or negative. Like previous research into expressive writing and spoken disclosure, they suggest that reflecting on email conversations that have been forgotten or put aside heightens negative affect and unsettles ideas about the level of meaning in life, but may also be connected with creating positive meaning out of the specific experiences, and, specifically for people who reflect on

negative experiences, alleviating emotional reactivity over time. However, the initial heightened experience of nostalgia, which has been found to increase positive self-attribution (Vess et al., 2012), decreases following the reflective activity, and so too does positive affect. These results suggest that wisdom may be gained from perusing the memories, whether positive, negative, or neutral, found in our personal digital archives, but that doing so may lead to lowered mood.

Despite the emergence of one significant interaction, as well as main effects of time and condition for some variables, most of the major hypotheses for this study, many involving interaction effects for the different time-points and conditions, were not supported. All findings should be interpreted in light of a small sample size. Furthermore, though the hypotheses were generated based on literature surrounding various forms of self-reflection on past positive and negative experiences, this is the first quantitative study examining the phenomenon of reflecting on one's email or digital conversations associated with past significant experiences, adding an explorative element to the study. Finally, not all participants followed the instruction to choose an event at least six months prior to the present. This may have had some influence on the results, as past research has shown that memories of more recent events can be more emotionally reactive (Ayduk & Kross, 2010; Nigro & Neisser, 1983).

As noted, results for satisfaction with life, subjective happiness, social support, rumination on an interpersonal offense, and reconstruing-type thoughts were not significant. Aside from the impact of a low sample size, satisfaction with life, subjective happiness, and social support are global constructs that may be less responsive to a brief intervention such as performed in this study. In addition, a visual examination of means for state rumination suggests that participants in the negative and neutral conditions reported similar scores, while those in the positive condition did not. This measure in particular may have been affected by a confounding process wherein participants in the neutral experience condition may have been led to reflect

deeply on what initially seemed to be an inconsequential memory. Finally, reconstructing-type thoughts were measured only at T2 and T3, so that they could be related to the specific experience reflected upon. Because of this, a baseline assessment of reconstructing-type thoughts was not available, rendering any initial change in the variable between T1 and T2 immeasurable. Furthermore, past study has found reports of recounting thoughts to be more likely to reach significant levels than reconstructing-type thoughts (Ayduk & Kross, 2010; Kross & Ayduk, 2008).

### **Practical Implications**

As this study attempted to make sense of phenomena that are constantly evolving in our digital landscape, practical implications centre around the necessity for educators, caregivers, mental health practitioners, and the general public to be cognizant of how delving into personal digital archives affects well-being and personal meaning. Reflecting on significant interpersonal experiences using archived email conversations may be helpful when undertaken with intention and an eye to reframing situational meaning. However, easy access to the details of past conversations regarding trivial and significant events may lead to maladaptive meaning-making and lowered mood, and this connection bears elucidating for many users of technology, perhaps especially those at an earlier developmental stage or who are already struggling with low mood or ruminative self-reflection (Davila et al., 2012).

Additionally, given interest in the world of software and human-computer interaction design in tapping into potential uses of consumers' personal digital archives (Hangal et al., 2011; Konrad, Isaacs, & Whittaker, 2016; Viégas et al., 2006), researchers and practitioners would benefit from increased relationships and collaboration between technology fields and psychology. Apps and digital services abound for helping humans live more efficient, healthy, communicative, and mindful lives, yet these services cannot ensure that the data generated will

be used in an adaptive and compassionate way. Human-computer interaction designers have recognized the value to the individual of technology-mediated reflection, and have begun to create and test applications that capitalize on users' personal digital archives for positive psychology purposes (e.g., Isaacs et al., 2013; Sosik & Cosley, 2014; Sosik, Zhao, & Cosley, 2012). However, practitioners and researchers must turn their attention to questions beyond whether individuals engage with interventions using their personal digital archives, to whether and how these interventions affect well-being differently than traditional positive reflective interventions. On a practical level, such inquiry starts with promoting individual curiosity, rather than self-judgement, about how looking back through emails or perusing historical social media profiles affects a person's thoughts and feelings about themselves and their relationships. As social media and digital communication use grows, so too does the need to engage with it from an intentional, adaptive stance.

### **Limitations and Future Directions**

A particular strength of this study is its use of a control condition to attempt to more reliably attribute results to the type of experience reflected upon, whether negative or positive. However, as noted, the design of the control condition itself may have resulted in a more negative reflection. Further study should address this issue by more closely approximating a neutral perusal of a personal email archive. Additionally, the somewhat exploratory nature of this study cast a wide net for possible outcomes of the intervention, but did not reach the desired sample size that might have increased the intervention's power. Future research should focus in on the variables shown to be more consistently supported in the literature, such as positive meaning and positive and negative affect, and endeavour to increase the sample size. Finally, regarding measures of affect, as past research has shown self-report measures of affect to be less

than robust in written reflection studies (Murray & Segal, 1994; Park & Blumberg, 2002), future research should include coding and analysis of written narratives.

### **Conclusion**

The current study offers insight into the effects of self-reflection using the lens of past email communication, suggesting that benefits of increased nostalgia and positive meaning are counterbalanced by lowered mood, regardless of the type of email reflected upon, while reflection on negative experiences using email conversations helps to lower levels of associated emotional reactivity. Despite its limitations, this study underscores the need for further research into how we can best use our personal digital archives as reflective aids. Consultation and collaboration with designers of software that shapes how we save, search, and reflect on our digital communication and online personas is paramount to harnessing the power of technology in service of psychological well-being. Yet ultimately, positive use of our digital applications and online services begins with strengthening our personal capacity for adaptive self-reflection.

Table 1

*Means and Standard Deviations of Variables Across Conditions for T1 and T2*

Variable	Positive		Negative		Neutral/Control	
	T1 <i>M(SD)</i>	T2 <i>M(SD)</i>	T1 <i>M(SD)</i>	T2 <i>M(SD)</i>	T1 <i>M(SD)</i>	T2 <i>M(SD)</i>
Positive affect	27.27(7.59)	28.68(6.98)	28.19(8.55)	26.62(10.57)	27.13(6.27)	27.17(7.33)
Negative affect	1.12(0.11)	1.12(0.11)	1.15(0.14)	1.22(0.16)	1.17(0.14)	1.22(0.16)
Satisfaction with life	23.36(5.52)	24.05(6.25)	24.76(6.41)	24.86(7.28)	23.57(6.19)	22.48(8.68)
Subjective happiness	5.03(0.91)	5.06(0.86)	4.82(1.37)	4.79(1.34)	4.67(1.00)	4.62(1.06)
Meaning in life - presence	21.68(5.46)	21.59(5.33)	23.67(6.16)	21.52(7.70)	19.39(7.40)	18.48(6.96)
Meaning in life - search	25.55(6.86)	25.09(7.92)	26.52(6.06)	25.67(6.06)	24.30(7.87)	24.48(7.33)
State nostalgia	3.39(1.44)	4.48(1.27)	3.03(1.44)	3.75(1.30)	2.71(1.24)	3.38(1.25)
Social support	3.80(0.48)	3.87(0.60)	3.85(1.00)	3.80(1.06)	3.82(0.83)	3.84(0.86)
Emotional reactivity	5.24(0.95)	5.40(1.15)	4.78(1.75)	4.81(1.55)	4.32(1.21)	4.28(1.27)
Positive meaning	9.36(4.82)	10.05(4.63)	8.67(4.02)	9.71(4.37)	7.74(3.98)	9.13(3.43)
State rumination	11.68(5.63)	11.59(5.97)	14.67(6.26)	14.43(6.59)	15.26(5.52)	14.35(5.56)

Table 2

*Means and Standard Deviations Across all Variables and all Participants for T1 and T2*

Variable	T1 <i>M(SD)</i>	T2 <i>M(SD)</i>
Positive affect	27.52(7.39)	27.50(8.31)
Negative affect	1.15(0.13)	1.19(0.15)
Satisfaction with life	23.88(5.98)	23.76(7.45)
Subjective happiness	4.84(1.10)	4.82(1.10)
Meaning in life - presence	21.52(6.55)	20.48(6.78)
Meaning in life - search	25.42(6.95)	25.06(7.07)
State nostalgia	3.04(1.38)	3.86(1.34)
Social support	3.82(.79)	3.85(.84)
Emotional reactivity	4.77(1.37)	4.82(1.39)
Positive meaning	8.58(4.28)	9.62(4.12)
State rumination	13.88(5.93)	13.45(6.09)



Table 3

*Correlations among all Measures across T1 and T2*

Variable	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	
1. PANAS PA T1	1																						
2. PANAS NA T1	.164	1																					
3. SWLS T1	.124	-.359**	1																				
4. MLQ P T1	.214	-.137	.403**	1																			
5. MLQ S T1	.036	.160	-.043	.120	1																		
6. PMS T1	.042	-.141	-.037	.174	.027	1																	
7. RIO T1	.209	.391**	-.181	-.113	.135	-.117	1																
8. SHS T1	.359**	-.111	.536**	.576**	-.019	.150	-.243*	1															
9. SNS T1	.261*	.247*	-.163	-.048	.075	.231	.104	.027	1														
10. SSS T1	.103	-.227	.598**	.145	.057	.050	-.123	.506**	-.132	1													
11. ERI T1	.202	.064	-.231	-.009	-.235	.151	.201	-.052	.221	-.116	1												
12. PANAS PA T2	.569**	-.071	.121	.182	.034	.151	-.085	.232	.225	.090	.142	1											
13. PANAS NA T2	.186	.494**	-.305*	-.127	.088	-.110	.413**	-.130	.185	-.174	.040	-.090	1										
14. SWLS T2	.093	-.343**	.909**	.374**	-.038	.027	-.207	.501**	-.207	.609**	-.179	.178	-.361**	1									
15. MLQ P T2	.208	-.208	.490**	.869**	.048	.257*	-.114	.604**	.092	.225	.056	.238	-.210	.502*	1								
16. MLQ S T2	.052	.155	-.004	.082	.931**	.011	.100	-.022	-.017	.097	-.285 <sup>†</sup>	.031	.070	.000	.014	1							
17. PMS T2	.077	-.058	.081	.228	.112	.750**	-.067	.320**	.311*	.194	.049	.266*	.052	.128	.288*	.071	1						
18. RIO T2	.183	.360**	-.171	-.140	.026	-.127	.851**	-.290*	.217	-.166	.152	-.132	.427**	-.238	-.150	-.017	-.132	1					
19. SHS T2	.333**	-.148	.618**	.490**	-.082	.100	-.300*	.908**	.059	.510**	-.077	.239	-.199	.571*	.527**	-.074	.247*	-.244*	1				
20. SNS T2	.238	-.082	.051	-.030	-.056	.022	-.060	.039	.437**	.102	.294 <sup>†</sup>	.242*	.077	.107	.123	-.082	.082	-.042	.046	1			

Variable	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	
21. SSS T2	.095	-.242	.561**	.111	.027	.017	-.132	.491**	-.159	.974**	-.133	.108	-.182	.608*	.203	.065	.183	-.181	.480*	.148	1		
22. ERI T2	.232	-.067	-.095	-.111	-.032	.092	.111	.015	.271*	.039	.594**	.152	.161	-.037	-.088	-.122	.241	.170	.074	.436**	.040	1	

*Note.* PANAS PA = Positive and Negative Affect Scale – Positive Affect subscale; PANAS NA = Positive and Negative Affect Scale – Negative Affect subscale; SWLS = Satisfaction with Life Scale; MLQ P = Meaning in Life Questionnaire – Presence of Meaning subscale; MLQ S = Meaning in Life Questionnaire – Search for Meaning subscale; PMS = Positive Meaning Scale; RIO = Rumination about an Interpersonal Offense Scale; SHS = Subjective Happiness Scale; SNS = State Nostalgia Scale; SSS = MOS Social Support Scale; ERI = Emotional Reactivity Index

\* $p < .05$ . \*\* $p < .01$

$N = 66$

Table 4

*Means and Standard Deviations of Variables Across Conditions for T2 and T3*

Variable	Positive		Negative		Neutral/Control	
	T2 <i>M(SD)</i>	T3 <i>M(SD)</i>	T2 <i>M(SD)</i>	T3 <i>M(SD)</i>	T2 <i>M(SD)</i>	T3 <i>M(SD)</i>
Positive affect	28.82(6.72)	22.88(8.62)	26.06(10.54)	23.41(7.91)	25.94(7.59)	21.44(7.01)
Negative affect	1.13(0.12)	1.14(0.12)	1.22(0.17)	1.13(0.13)	1.19(0.14)	1.17(0.13)
Satisfaction with life	24.12(5.35)	24.18(3.66)	24.41(7.49)	25.06(6.71)	23.28(8.37)	23.28(7.39)
Subjective happiness	5.21(0.67)	5.06(0.79)	4.72(1.35)	4.71(1.50)	4.56(1.15)	4.58(1.22)
Meaning in life - presence	22.06(4.64)	20.82(4.80)	20.71(7.46)	22.65(7.70)	18.33(7.23)	17.50(8.13)
Meaning in life - search	26.29(7.08)	24.00(7.12)	24.47(5.85)	25.00(6.94)	24.72(7.76)	23.33(6.67)
State nostalgia	4.55(1.29)	2.86(1.35)	3.96(1.23)	2.31(1.37)	3.35(1.36)	2.65(1.33)
Social support	3.89(0.59)	3.92(0.63)	3.77(1.14)	3.84(1.08)	3.86(0.89)	3.83(0.90)
Emotional reactivity	5.35(1.09)	4.80(1.14)	5.06(1.34)	3.12(1.51)	4.06(1.25)	3.56(1.24)
Positive meaning	10.41(4.64)	9.82(4.53)	9.29(4.33)	9.29(3.92)	8.61(3.71)	7.28(3.03)
State rumination	11.06(5.96)	11.12(5.59)	15.24(6.19)	11.59(5.20)	13.44(5.41)	12.94(4.71)
Recounting thoughts	5.29(1.36)	4.71(1.36)	6.00(0.71)	4.94(1.03)	4.39(1.50)	4.39(1.72)
Reconstruing thoughts	4.14(1.05)	4.02(1.37)	4.59(1.39)	4.24(1.54)	3.94(1.53)	3.57(1.38)

Table 5

*Means and Standard Deviations Across all Variables and all Participants for T2 and T3*

Variable	T2 <i>M(SD)</i>	T3 <i>M(SD)</i>
Positive affect	26.94(8.37)	22.58(7.75)
Negative affect	1.18(0.15)	1.14(0.13)
Satisfaction with life	23.92(7.08)	24.15(6.09)
Subjective happiness	4.82(1.11)	4.78(1.20)
Meaning in life - presence	20.33(6.64)	20.27(7.25)
Meaning in life - search	25.15(6.87)	24.10(6.80)
State nostalgia	3.95(1.36)	2.61(1.34)
Social support	3.84(.89)	3.86(.87)
Emotional reactivity	4.82(1.33)	3.83(1.47)
Positive meaning	9.42(4.22)	8.77(3.94)
State rumination	13.25(5.99)	11.90(5.13)
Thought content - recounting	5.23(1.39)	4.68(1.40)
Thought content - reconstruing	4.22(1.34)	3.94(1.43)

Table 6

*Correlations among all Measures across T2 and T3*

Variable	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25
1. PANAS PA T2	1																								
2. PANAS NA T2	-.230	1																							
3. SWLS T2	.325*	-.267	1																						
4. MLQ P T2	.227	-.138	.547**	1																					
5. MLQ S T2	-.033	.042	-.037	-.066	1																				
6. PMS T2	.140	-.109	.278*	.377**	.074	1																			
7. RIO T2	-.175	.484**	-.181	-.100	.150	-.191	1																		
8. SHS T2	.287*	-.236	.565**	.616**	-.161	.286*	-.182	1																	
9. SNS T2	.292*	.202	.171	.085	-.091	.176	-.059	.102	1																
10. SSS T2	.129	-.202	.657**	.205	-.036	.262	-.119	.488**	.144	1															
11. ERI T2	.152	.161	-.037	-.088	-.122	.241	.170	.074	.436**	.040	1														
12. TCI Recount T2	.040	-.028	-.076	-.039	-.145	-.166	.318*	-.064	.241	.056	.235	1													
13. TCI Reconstreue T3	.089	.253	.097	-.071	.276*	.301*	.368**	-.068	.317*	.101	.297*	.146	1												
14. PANAS PA T3	.565**	.053	.265	.361**	-.238	.036	-.019	.341*	.391**	.030	.102	-.075	.044	1											
15. PANAS NA T3	-.147	.330*	-.305*	-.191	.104	-.347*	.182	-.190	-.142	-.295*	-.115	.044	-.053	.016	1										
16. SWLS T3	.195	-.224	.877**	.520**	-.030	.296*	-.178	.572**	.141	.590**	.033	-.145	.147	.282*	-.300*	1									
17. MLQ P T3	.122	-.054	.525**	.873**	-.073	.263	-.044	.545**	.004	.253	.014	.021	-.080	.238	-.210	.533**	1								
18. MLQ S T3	-.139	.189	-.124	-.005	.779**	-.062	.313*	-.204	-.119	-.232	-.200	-.039	.289*	-.163	.151	-.104	.038	1							
19. PMS T3	.219	.056	.134	.387**	.100	.580**	-.031	.135	.343*	.070	.261	.048	.322*	.027	-.316*	.125	.363**	-.009	1						

Variable	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25
20. RIO T3	-	.286*	-.164	-.174	.314*	.007	.514**	-.272	-.107	-.087	.155	-.107	.226	-.026	-	-.209	-.146	.289*	.086	1					
21. SHS T3	.268	-.053	.562**	.600**	-.175	.311*	-.131	.888**	.207	.496**	.214	-.083	.019	.443**	-	.584**	.583**	-.143	.161	-.179	1				
22. SNS T3	.150	.214	-.131	-.073	.275*	-.006	.308*	-.002	.225	-.104	.050	-.021	.290*	.205	.233	-.119	-.206	.187	.115	.320*	-.007	1			
23. SSS T3	.100	-.091	.696**	.274*	.023	.264	-.030	.518**	.206	.945**	.142	.099	.156	.093	-	.683**	.303*	-.130	.080	-.064	.573**	-.047	1		
24. ERI T3	.145	.074	.014	.093	.008	.171	-.028	.203	.384**	.005	.534**	.038	.043	.247	.013	-.042	-.054	-.083	.149	.228	.299 <sup>†</sup>	.221	.063	1	
25. TCI Recount T3	.098	.050	.083	-.092	-.164	.064	.104	.006	.231	.030	.464**	.279*	.164	-.010	-	.008	-.009	-.265	.346*	.250	-.003	.175	-	.350 <sup>†</sup>	1
26. TCI Reconstruct T3	.201	.250	.143	.045	.140	.183	.415**	.088	.349*	.106	.273 <sup>†</sup>	.263	.695**	.209	-	.139	-.029	.147	.436**	.232	.142	.386**	.176	.263	.372**

Note. PANAS PA = Positive and Negative Affect Scale – Positive Affect subscale; PANAS NA = Positive and Negative Affect Scale – Negative Affect subscale; SWLS = Satisfaction with Life Scale; MLQ P = Meaning in Life Questionnaire – Presence of Meaning subscale; MLQ S = Meaning in Life Questionnaire – Search for Meaning subscale; PMS = Positive Meaning Scale; RIO = Rumination about an Interpersonal Offense Scale; SHS = Subjective Happiness Scale; SNS = State Nostalgia Scale; SSS = MOS Social Support Scale; ERI = Emotional Reactivity Index; TCI Recount = Thought Content Index – Recounting Thoughts subscale; TCI Reconstruct = Thought Content Index – Reconstructing Thoughts subscale

\* $p < .05$ . \*\* $p < .01$

$N = 52$

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## Appendix A: Participant Recruitment Poster



### Do you use email?

Seeking participants for a study of self-reflection, email communication, and psychological health.

#### Participants must be:

- individuals 18 years and older
- self-identified frequent email users.

#### The study will require:

- approx. 1 hour in a lab session and a ½ hour follow-up survey via email two weeks later.
- answering some questionnaires about how you are feeling
- reflecting on a memory of a past relationship experience.

Participants will receive a \$10 Starbucks gift card in appreciation of their time.

Interested individuals may contact the researcher at [xxxxx@xxxxx.xxx.xx](mailto:xxxxx@xxxxx.xxx.xx). Please note that contacting the researcher in no way obligates you to participate in the study.

Participation in this study is entirely voluntary, and participants may choose to withdraw at any time. The principal investigator for this study is Dr. Rhea Owens, Assistant Professor, ECPS.



## Appendix B: Participant Consent Form



### PARTICIPANT CONSENT FORM

**You Had Mail:**

**Does reflection on personal email affect self-reflective outcomes?**

#### **1. STUDY TEAM**

**Who is conducting the study?**

**Principal Investigator:** Dr. Rhea Owens

Assistant Professor, Department of Educational and Counselling Psychology and Special Education

xxx-xxx-xxxx

xxxx.xxxx@ubc.ca

**Co-Investigator:** Caitlin Kopperson

MA Student, Department of Educational and Counselling Psychology and Special Education

xxx-xxx-xxxx

xxxx.xxxx@alumni.ubc.ca

**Research Assistants:**

Wenny Cheung – MEd Student, Department of Educational and Counselling Psychology and Special Education

Parky Lau – BA Student, Department of Psychology

Yu (Anita) Sun – BA Student, Department of Psychology

Sara Ahmadian – BA, UBC Psychology

This research is being conducted as part of the requirements for fulfillment of a graduate degree (Master of Arts) in Counselling Psychology, and will form the basis of a thesis.

#### **2. SPONSOR**

The study is partially funded by a Graduate Student Research Grant from the UBC Faculty of Education.

### **3. INVITATION AND STUDY PURPOSE**

#### **Why are we doing this study?**

We are doing this study to learn more about how online archives of personal communication (for example, email archives) affect the way that people reflect on past experiences.

#### **Why should you take part in this study?**

Participation will help to further our knowledge about technology and self-reflection.

### **4. STUDY PROCEDURES**

#### **What happens if you say “Yes, I want to be in the study”?**

- We will require up to 1.5 hours of your time, in two sessions over a two-week period. The first session will take place now, and will last approximately 1 hour. The second session will involve you filling out questions electronically on a follow-up survey that we will email to you two weeks from now in a location of your choosing, which will take up to a ½ hour.
- For successful participation in this study, it is important that you are certain you possess archived email conversations regarding significant past positive and negative interpersonal experiences.
- During the first study session:
  - You will first fill out several questionnaires asking about your personal information, such as how you are feeling right now, your level of happiness and well-being, your sense of meaning in life, your general health, sense of nostalgia, and perceptions about general social relationships.
  - After completing questionnaires, you will be asked to think about an interpersonal experience that brings up a specified emotional response.
  - You may also be asked to search your email for conversations related to the interpersonal experience. Once an email is located, you will be asked to reflect on it for approximately 15 minutes, guided by a prompt shared by the researcher. Following your reflection, you will be asked to complete additional questionnaires.
  - If you were asked to reflect on an email, you will be asked to copy and paste the text of the whole email conversation into a blank document for further examination. All identifying information will be removed immediately following your study session.
  - We would also like to video record your face as you carry out the tasks of the study. If you do not wish to be video recorded, you may choose to participate in the study without being video recorded.
- During the follow-up study session, you will be emailed a follow-up survey containing questionnaires. The email will also include a form giving you more information about the study.

### **5. STUDY RESULTS**

The results of this study will be reported in a graduate student thesis and may also be published in journal articles and books. All information will be de-identified and will consist of a summary of all participants’ results, not

individual answers.

If you would like to be provided with the results of the study, please contact the researcher at [caitlin.kopperson@alumni.ubc.ca](mailto:caitlin.kopperson@alumni.ubc.ca).

## **6. POTENTIAL RISKS OF THE STUDY**

### **Is there any way being in this study could be bad for you?**

Some participants in the study will be asked to reflect on distressing personal experiences. Doing these things may bring up troubling memories and emotions. If at any time you do not wish to continue with the study, you may choose to stop. As well, a list of affordable, available, and appropriate counselling resources will be given to you before beginning the study, should you need further support after participating in the study.

## **7. POTENTIAL BENEFITS OF THE STUDY**

### **Will being in this study help you in any way?**

You may or may not benefit from participation in this study. Potential benefits may include an increased sense of well-being and social connection with significant others, and/or enhanced self-awareness.

## **8. CONFIDENTIALITY**

### **How will your privacy be maintained?**

Your confidentiality will be respected. Information that discloses your identity will not be released without your consent unless required by law. You will not be identified by name in any reports of the completed study.

Digital data, including digital video recordings, will be stored in password-protected and encrypted files on a secure computer. Back-ups will also be password-protected and encrypted. All paper documents will be kept in a locked file cabinet in the researcher's lab. Only the researchers and research assistants will have access to the data. After 5 years, hard copies of documents will be disposed of through confidential shredding services. Electronic copies will be kept, de-identified, indefinitely. Survey data will be collected using the UBC Survey Tool, which is Canadian-hosted and maintained by a company that complies with the BC Freedom of Information and Protection of Privacy Act. All data is stored and backed-up in Canada.

No identifying information will be stored with any of your data. ID codes will be used on data collection forms. Personal information such as your email address will only be used to send the follow-up survey to you, and after all data has been collected personal identifiers will be destroyed.

## **9. PAYMENT**

### **Will you be paid for taking part in this research study?**

Participants will receive a \$10 Starbucks gift card in appreciation of their time. Participants may receive extra credit points from participating instructors, but this is not guaranteed. Participating instructors would have referred you to this study.

## **10. CONTACT FOR INFORMATION ABOUT THE STUDY**

### **Who can you contact if you have questions about the study?**

If you have any questions or concerns about what we are asking of you, please contact the study leader or one of the study staff. The names and telephone numbers are listed at the top of the first page of this form.

## **11. CONTACT FOR COMPLAINTS**

### **Who can you contact if you have complaints or concerns about the study?**

If you have any concerns or complaints about your rights as a research participant and/or your experiences while participating in this study, contact the Research Participant Complaint Line in the UBC Office of Research Ethics at xxx-xxx-xxxx or if long distance e-mail xxxx@ors.ubc.ca or call toll free x-xxx-xxx-xxxx.



## **12. PARTICIPANT CONSENT AND SIGNATURE PAGE**

Taking part in this study is entirely up to you. You have the right to refuse to participate in this study. If you decide to take part, you may choose to pull out of the study at any time without giving a reason and without any negative impact for you.

- Your signature below indicates that you have received a copy of this consent form, if you indicated you desired one, for your own records.
- Your signature also indicates that you consent to participate in this study.

---

Participant Signature \_\_\_\_\_ Date \_\_\_\_\_

---

Printed Name of the Participant signing above \_\_\_\_\_

- Your signature below indicates that you consent to leaving a copy of a personal email conversation with the researchers, which will be de-identified by the researchers.

---

Participant Signature \_\_\_\_\_ Date \_\_\_\_\_

- Your signature below indicates that you consent to a video recording of your face being taken while completing the study tasks.

---

Participant Signature \_\_\_\_\_ Date \_\_\_\_\_

## **Appendix C: List of Resources for Participants**

### **List of Resources**

Should you experience distress as a result of participating in this study, please seek support from the following resources:

#### **UBC Counselling Services – free for students**

[students.ubc.ca/livewell/services/counselling-services](https://students.ubc.ca/livewell/services/counselling-services)

604.822.3811

Brock Hall: 1874 East Mall, Room 1040

Lower Mall Research Station: 2259 Lower Mall, Room 358

#### **Scarfe Counselling Clinic (at UBC) – free**

[ecps.educ.ubc.ca/counselling-centres/scarfe-free-counselling-clinic](https://ecps.educ.ubc.ca/counselling-centres/scarfe-free-counselling-clinic)

604-827-1523

1100 Scarfe Building

2125 Main Mall

#### **Family Services of Greater Vancouver – fees on sliding scale**

[fsgv.ca](https://fsgv.ca)

604-874-2938

various locations

#### **SFU Counselling Clinic – free**

[sfu.ca/education/centres-offices/sfu-surrey-counselling-centre.html](https://sfu.ca/education/centres-offices/sfu-surrey-counselling-centre.html)

604-587-7320

9484 122nd Street

Surrey, BC, V3V 4M1

#### **Vancouver Crisis Centre – free phone and online support**

[crisiscentre.bc.ca](https://crisiscentre.bc.ca)

604-872-3311

## Appendix D: Questionnaire Package

### MEASURES

#### Demographics Questionnaire

What is your age? \_\_\_\_\_

How would you identify your gender?

- Male
- Female
- Transgender
- Other: \_\_\_\_\_

What is your race/ethnicity?

- African; African-Canadian; Black
- Aboriginal Canadian; Indigenous; Native Canadian; First Nations
- Arab-Canadian; Middle Eastern
- Asian; Asian-Canadian; Chinese; Filipino; Southeast Asian; West Asian; Japanese; Korean
- Asian Indian
- Hispanic; Latina/o American
- Pacific Islander
- White; European-Canadian; Caucasian
- Multiracial

Other: \_\_\_\_\_

Highest degree obtained?

- Less than High School
- Some High School
- High School Graduate/GED
- Trade/Vocational School
- Some University or College
- Undergraduate Degree (e.g. B.A., B.S.)
- Master's Degree
- Professional Degree or Doctoral Degree (e.g., M.B.A., Ph.D, M.D., etc.)

Current Relationship Status?

- Married/Common-Law
- Separated
- Divorced
- Long-term dating relationship (i.e., 1 or more years)
- Short-term dating relationship (i.e., less than 1 year)
- Single

For how many years have you been using personal email? \_\_\_\_\_

How often do you use email?

- Daily
- Weekly
- Monthly

How often do you read personal emails from the past?

- Never
- Less than once a month
- Once or twice a month
- Once a week or more

If you read personal emails from the past, what kinds of emails do you usually read?

- Emails from specific people:
  - Family members
  - Current significant others/partners
  - Former (ex-) significant others/partners
  - Current friends
  - Former (ex-) friends
  - Other: \_\_\_\_\_
- Emails about specific events
  - Specify: \_\_\_\_\_
- Miscellaneous emails

## PANAS Questionnaire

This scale consists of a number of words that describe different feelings and emotions. Read each item and then list the number from the scale below next to each word. Indicate to what extent you feel this way right now, that is, at the present moment.

(1) *Very Slightly or Not at All*; (2) *A Little*; (3) *Moderately*; (4) *Quite a Bit*; (5) *Extremely*

- |                       |                      |
|-----------------------|----------------------|
| _____ 1. Interested   | _____ 11. Irritable  |
| _____ 2. Distressed   | _____ 12. Alert      |
| _____ 3. Excited      | _____ 13. Ashamed    |
| _____ 4. Upset        | _____ 14. Inspired   |
| _____ 5. Strong       | _____ 15. Nervous    |
| _____ 6. Guilty       | _____ 16. Determined |
| _____ 7. Scared       | _____ 17. Attentive  |
| _____ 8. Hostile      | _____ 18. Jittery    |
| _____ 9. Enthusiastic | _____ 19. Active     |
| _____ 10. Proud       | _____ 20. Afraid     |

## Satisfaction with Life Scale

Below are five statements that you may agree or disagree with. Using the 1 - 7 scale below, indicate your agreement with each item by placing the appropriate number on the line preceding that item. Please be open and honest in your responding.

- 7 - Strongly agree
- 6 - Agree
- 5 - Slightly agree
- 4 - Neither agree nor disagree
- 3 - Slightly disagree
- 2 - Disagree
- 1 - Strongly disagree

\_\_\_\_\_ In most ways my life is close to my ideal.

\_\_\_\_\_ The conditions of my life are excellent.

\_\_\_\_\_ I am satisfied with my life.

\_\_\_\_\_ So far I have gotten the important things I want in life.

\_\_\_\_\_ If I could live my life over, I would change almost nothing.

## Subjective Happiness Scale

For each of the following statements and/or questions, please circle the point on the scale that you feel is most appropriate in describing you.

1. In general, I consider myself:

not a very happy person    1    2    3    4    5    6    7    a very happy person

2. Compared with most of my peers, I consider myself:

less happy    1    2    3    4    5    6    7    more happy

3. Some people are generally very happy. They enjoy life regardless of what is going on, getting the most out of everything. To what extent does this characterization describe you?

not at all    1    2    3    4    5    6    7    a great deal

4. Some people are generally not very happy. Although they are not depressed, they never seem as happy as they might be. To what extent does this characterization describe you?

not at all    1    2    3    4    5    6    7    a great deal

## The Meaning in Life Questionnaire

Please take a moment to think about what makes your life feel important to you. Please respond to the following statements as truthfully and accurately as you can, and also please remember that these are very subjective questions and that there are no right or wrong answers. Please answer according to the scale below:

(1) *Absolutely Untrue*; (2) *Mostly Untrue*; (3) *Somewhat Untrue*; (4) *Can't Say True or False*;  
(5) *Somewhat True*; (6) *Mostly True*; (7) *Absolutely True*

1. I understand my life's meaning.
2. I am looking for something that makes my life feel meaningful.
3. I am always looking to find my life's purpose.
4. My life has a clear sense of purpose.
5. I have a good sense of what makes my life meaningful.
6. I have discovered a satisfying life purpose.
7. I am always searching for something that makes my life feel significant.
8. I am seeking a purpose or mission for my life.
9. My life has no clear purpose.
10. I am searching for meaning in my life.



### **State Nostalgia Scale**

Please answer the following questions using this scale:

(1) *strongly disagree*; (2) *disagree*; (3) *somewhat disagree*; (4) *somewhat agree*; (5) *agree*; (6) *strongly agree*

1. Right now, I am feeling quite nostalgic
2. Right now, I am having nostalgic thoughts
3. I feel nostalgic at the moment

## MOS Social Support Survey

People sometimes look to others for companionship, assistance, or other types of support. How often is each of the following kinds of support available to you if you need it? Circle one number on each line.

	<b>None of the time</b>	<b>A little of the time</b>	<b>Some of the time</b>	<b>Most of the time</b>	<b>All of the time</b>
<b>Emotional/informational support</b>					
Someone you can count on to listen to you when you need to talk	1	2	3	4	5
Someone to give you information to help you understand a situation	1	2	3	4	5
Someone to give you good advice about a crisis	1	2	3	4	5
Someone to confide in or talk to about yourself or your problems	1	2	3	4	5
Someone whose advice you really want	1	2	3	4	5
Someone to share your most private worries and fears with	1	2	3	4	5
Someone to turn to for suggestions about how to deal with a personal problem	1	2	3	4	5
Someone who understands your problems	1	2	3	4	5
<b>Tangible support</b>					
Someone to help you if you were confined to bed	1	2	3	4	5
Someone to take you to the doctor if you needed it	1	2	3	4	5
Someone to prepare your meals if you were unable to do it yourself	1	2	3	4	5
Someone to help with daily chores if you were sick	1	2	3	4	5
<b>Affectionate support</b>					
Someone who shows you love and affection	1	2	3	4	5
Someone to love and make you feel wanted	1	2	3	4	5
Someone who hugs you	1	2	3	4	5
<b>Positive social interaction</b>					
Someone to have a good time with	1	2	3	4	5
Someone to get together with for relaxation	1	2	3	4	5
Someone to do something enjoyable with	1	2	3	4	5
<b>Additional item</b>					
Someone to do things with to help you get your mind off things	1	2	3	4	5

## Best/Worst Experience Questionnaire

*(italics indicate different versions based on condition)*

Please list the two (2) *BEST/WORST* or *HAPPIEST/MOST UPSETTING* interpersonal experiences of your life, occurring at least six months prior to the present.

*These must be events for which you are sure you have saved email conversations between you and the person or persons involved. Use only enough detail so that you are reminded of the specific event.*

1.

2.

Then, please rate how *upsetting/joyful or happy* these events are to you now on a 10-point scale (1 - not upsetting, 10 - extremely upsetting) and select (circle) the one that is most *upsetting/joyful or happy*.

Please answer the following questions regarding your selected experience:

1. How recent was this experience?
2. What is the relationship of the person or persons in this experience to you?
3. How significant is this experience in your life?  
(1 - not at all significant, 10 - very significant)
4. How much time have you spent reading your personal emails about this experience?  
(1 - none, 10 - a lot)
5. How much time have you spent writing about this experience?  
(1 - none, 10 - a lot)
6. *Is this experience resolvable (do you think the experience can be easily resolved by you, or is it out of your control)? (1 - not easily resolvable, 10 - easily resolvable). Q6*

### **Emotional Reactivity Index**

*(italics indicate different versions based on condition)*

Please answer the following three questions about the significant interpersonal experience you have indicated using *the Best/Worst Experience Questionnaire / a neutral interaction with a friend or acquaintance*.

Use the following 7-point scale:

Strongly Disagree 1 2 3 4 5 6 7 Strongly Agree

1. Thinking about this event still makes me feel *upset / happy (e.g., sad, hurt, angry, rejected / joyful, excited, accepted)*.
2. I re-experienced the emotions I originally felt during the event when I thought about it now.
3. As I think about this event now, my emotions and physical reactions are still intense.

### **Positive Meaning Scale**

*(italics indicate different versions based on condition)*

Please answer the following questions regarding the significant interpersonal event from the Best/Worst Experience Questionnaire / *an acquaintance for whom you do not have any strong feelings (neutral conditions)*:

Rate the answers to the following questions according to this scale:

*(0) definitely no; (1) no; (2) yes; (3) definitely yes; (N/A) not applicable*

1. Did anything good come out of dealing with this problem?
2. Do you feel that you might find benefit in this situation in the long-term?
3. Do you think it is likely that there is something to learn from this experience?

Rate the answers to the following questions according to this scale:

*(0) no; (1) no, not much; (2) yes, sometimes; (3) yes, fairly often; (N/A) not applicable*

4. Did you try to see the good side of the situation?
5. Did you think about how this event could change your life in a positive way?

**Rumination about an Interpersonal Offense Scale**  
*(italics indicate different versions based on condition)*

Directions:

The following items describe reactions people can have to being hurt by others. Please answer the following questions about the person from the significant interpersonal experience you have indicated on the Best/Worst Experience Questionnaire / *an acquaintance for whom you do not have any strong feelings (neutral conditions)*.

Indicate your agreement or disagreement with the following statements:

1 = Strongly Disagree 2 = Disagree 3 = Neutral 4 = Agree 5 = Strongly Agree

1. I can't stop thinking about how I was wronged by this person.
2. Memories about this person's wrongful actions have limited my enjoyment of life.
3. I have a hard time getting thoughts of how I was mistreated out of my head.
4. I try to figure out the reasons why this person hurt me.
5. The wrong I suffered is never far from my mind.
6. I find myself replaying the events over and over in my mind.

## Thought Content Index

Please answer these questions using the following 7-point scale:

Strongly Disagree 1 2 3 4 5 6 7 Strongly Agree

1. My thoughts focused on the specific chain of events (sequence of events, what happened, what was said and done) as I thought about my selected interpersonal experience in this study.
2. As I thought about my selected interpersonal experience during the study I had a realization that caused me to think differently about the experience.
3. As I thought about my selected interpersonal experience during the study I had a realization that made me experience a sense of closure.
4. Thinking about my selected interpersonal experience during the experiment led me to have a clearer and more coherent understanding of this experience.

## **Appendix E: Study Description and Debrief**

### **You Had Mail:**

#### **Does reflection on personal email affect self-reflective outcomes?**

##### Description of the Study

Self-reflection has long been viewed as a means to insight and well-being. In today's digital world, our email and social media archives often contain records of our past experiences that are much more detailed and stable over time than our personal recollections. This study intends to examine the effects of written reflection on past interpersonal experiences when past emails associated with the experience are used in self-reflection. Participants were assigned to positive, negative, and neutral experience conditions. Within each group, participants recalled and reflected upon a relevant interpersonal experience, followed by either writing reflectively about the experience, or reading personal emails regarding the experience and then writing reflectively about it. Well-being and relationship perceptions were examined by the questions you answered in the surveys and open-ended questions. If you participated in an email-reflection group, the text of the email conversation you reflected upon was compared to your written reflection narrative to look at positive and negative emotions in the past and the present.